Medical Malpractice in Public Healthcare Systems:
An empirical investigation of scheduled damages

Medische fouten in publieke gezondheidszorgsystemen:
Een empirisch onderzoek naar normering van schadevergoeding

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Contents

List of Abbreviations

AAI	Alliance of American Insurers
AMA	American Medical Association
AMAMI	Associazione per i Medici Accusati di Malpractice Ingiustamente
ANIA	Italian Association of Insurance Companies
ARITMIA	Associazione Ricerca Italiana Tutela Medici Ingiustamente Accusati
ASPC	Italian Authority for the Supervision of Public Contracts
BRFSS	Behavioral Risk Factor Surveillance System
CINEAS	Consorzio Universitatio per l'Ingegneria nelle Assicurazioni
DRG	Diagnosis Related Group
DSTLR	Databse of State Tort Law Reforms
EU	European Union
GAO	U.S. General Account Office
GDP	Gross Domestic Product
HHI	Herfindahl-Hirschman Index
IH	Independent Hospital
IMF	Italian Ministry of Finance
IMH	Italian Ministry of Health
IRAP	Regional Tax on Production (Imposta Regionale sulle Attività Produttive)
IRPEF	Nationa Personal Income Tax (Imposta sul Reddito delle Persone Fisiche)
IRR	Incidence Rate Ratios
ISTAT	Italian Institute of Statistics
IV	Instrumental Variable
LEA	Essential Levels of Care
LHA	Local Health Authority
LHU	Local Health Unit
MEAT	Most Economically Advantageous Tender
MedPAC	Medicare Payment Advisory Commission

MICRA	Medical Injury Compensation Reform Act
MLM	Medical Liability Monitor
MRSA	Methicillin Resistant Staphylococcus Aureus Infections
NAIC	National Association of Insurance Commissioners
NCHS	National Center for Health Statistic
NDF	Natality Detail File
NHDS	National Hospital Discharge Survey
NHS	Healthcare National Service
NHSLA	National Health Service Litigation Authority
NIS	Nationwide Inpatient Sample
NPDB	National Practitioner Data Bank
OECD	Organisation for Economic Co-operation and Development
OJ	Official Journal of the European Union
OLS	Ordinary Least Squares
ONIAM	Office national d'indemnisation des accidents mèdicaux
OTA	Office of Technology Assessment
PIAA	Physician Insurance Association of America
QALY	Quality Adjusted Life Year
QR	Quantile Regression
RH	National Institute for Scientific Research
SEER	Surveillance Epidemiology and End Results
TED	Tenders Electronic Daily
TH	Teaching Hospital
TSLS	Twostage Least Squares
U.S.	United States of America
UK	United Kingdom
VAT	Value Added Tax

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Chapter 1

Medical Malpractice: An Introduction

Professional malpractice has been associated with the medical profession from the moment of its conception.[1] Nevertheless, medical malpractice has asserted itself as one of the most critical issues for healthcare providers and for health policy in the last three decades.[2] In particular, the most famous and documented experience in terms of medical malpractice refers to the U.S., which starting from the end of the 1960s registered a strong but erratic increase in both the frequency of malpractice suits and the average compensation awarded to victims.[3] This process culminated in the mid 1970s when doctors, lawyers and insurance companies started to complain about a real medical malpractice crisis.[4] Such a crisis was mainly due to the sparse availability of medical professional coverage and it has later been followed by two other crises. In the 80s, the American malpractice insurance industry experienced a rapid increase in premium rates that led to problems of affordability of policies for medical liability. In the late 90s and the beginning of 2000, besides high premiums, the sector also suffered from a reduction in the availability of this type of insurance.[5]

Yet, in the last decades several other countries have faced and reported similar difficulties as far as medical professional liability insurance is concerned, regardless of the type of healthcare system (i.e. mainly public or mainly private), the type of legal system (i.e. common or civil law), as well as the type of liability regime (i.e. no-fault or liability based on negligence).[6]

[1] For an overview of the history of medical malpractice litigation, see Mohr (2000).

[2] Danzon (2000), p. 1343.

[3] For instance, Olsen (1999), citing Sloan et al. (1991), recalls that the U.S. insurance market for medical professional liability remained largely stable during most of the 1950s. Malpractice insurance did not represent a problematic business for private insurers, which used to sell these policies to doctors along with their motor vehicle and home coverage.

[4] Grembi (2012), p. 89.

[5] For an overview of the American experience, see Posner (1986), Robinson (1986), and Nye and Hofflander (1988).

[6] See, OECD (2006). In this regard, also the existing empirical literature provides evidence of the difficulties suffered by the medical malpractice insurance market of other developed countries. See, for instance, Dewees et al. (1991) for Canada and the United Kingdom or Danzon (1990) for Canada, Australia and the United Kingdom.

Among all possible determinants of malpractice crises, two factors are generally recognized as major driving forces: the increase in the litigation rate and the growth of the amounts of damages awarded to injured parties. Even though it is not possible to clearly identify the causes of the origin of these two phenomena, there is a general consensus regarding the idea that a number of trends contributed to them. The first one is to be found in medical and technological progress which has affected the malpractice system in several ways.[7] For instance, an immediate consequence of the advances in medicine and technology is that doctors nowadays can be monitored more closely, thus the assessment of physicians liability has become relatively easier. On the one hand, this implies that unmeritorious claims can be more easily identified. On the other hand, it means that it has also become possible to recognize malpractice events that previously would not have been discovered due to outdated technology.[8] At the same time, medical progress has enhanced expectations of success, reinforcing the idea of patients that medical accidents are usually caused by negligent doctors rather than being fatalities.[9] The second important tendency regards patients. Individuals have not only changed their expectations, but are more and more aware of their rights,[10] more informed about the existing medical treatments and more prone to react if they believe to have suffered a damage as a result of a health treatment.[11] Over time, this greater awareness of individuals has been accompanied also by an increase in patients' rights that, in turn, has implied new obligations for physicians (e.g. the right to informed consent). The third trend is represented by the rising life expectancy and the progressive aging of the population that are resulting in an increase in the portion of people seeking and needing medical care on a long-term basis. Furthermore, these two phenomena have the additional consequence of making patients' medical conditions more complex. Older patients tend to develop a higher comorbidity rate, that is, they tend to suffer from a combination of diseases that makes their medical condition and/or their main disease more difficult to treat. Lastly, there is a specific tendency associated with the liability system itself. Over time, malpractice law – at least in the OECD countries – has tended to gradually expand the right to compensation of injured parties (e.g. by moving the burden of proof from the victims to the defendants).[12]

All malpractice crises have three main characteristics in common. First, they entail an increase in the frequency of malpractice claims, which is not associated with a consistent rise in the number of medical errors. Namely, not all the events of alleged malpractice that lead to legal disputes are ultimately deemed as negligent errors in practice.[13] However, even in

[7] Grady (1988).

[8] In this regard, Sage (2003) notes that "*improvements in diagnostic technology have had dual effects on liability, not only increasing failure-to-diagnose claims, but also providing an evidentiary window on misadventures that would otherwise remain anatomically concealed.*"

[9] Sage (2003).

[10] In particular, OECD (2006) suggests that "*thanks to improved communication resulting inter alia from activism on the part of tailored associations and, in some countries, to direct influence and information campaigns by attorneys and other providers of legal services or media, patients have become more aware of their rights to payment of compensation for injuries and of the possibility for litigation to create new "rights".*"

[11] See, Amaral-Garcia and Grembi (2012).

[12] OECD (2006).

[13] See, Localio et al. (1991), O'Connell and Pohl (1998), and OECD (2006).

the case of acquittal, clinicians are concerned about being sued, because the involvement in a legal proceeding implies several costs (e.g., in terms of time and moral distress) and the acquittal itself may come when the reputation of the clinician has already been damaged. Second, all crises register a rise of malpractice insurance premiums, which makes it more difficult for healthcare providers to find adequate coverage. Third, they lead to a more frequent use of defensive practices by physicians, whose primary aim is not the minimization of medical errors, but rather the reduction of the likelihood of being sued.[14]

Malpractice crisis are particularly worrying also for their possible implications for patients. For example, they may lead to a reduction in the supply of medical services. Physicians, in fact, may decide to abandon the riskier segments of the market and/or to limit the amount of work because of the uneasiness in obtaining insurance coverage. At the same time, these crises may negatively affect the trust of people in the healthcare system and in healthcare providers. The wide publicity given to high-profile cases of malpractice and to the phenomenon of medical accidents in general, supports the public perception of a low quality system riddled with malpractice cases. Such a perception, combined with the belief of doctors of being subject to an increasing number of frivolous claims, has the ultimate effect of corroding the patient-physician relationship.

In order to overcome the medical insurance problem, governments have developed different schemes. In several countries, such as Australia, Canada, the United Kingdom and the United States, different associations or medical defense organizations have asserted themselves as the main players in the medical insurance market. In order to cope with medical malpractice, other mechanisms, such as self-insurance, risk retention and trusts, have also been adopted. Nonetheless, the discussion of malpractice crises is an ongoing, sensitive policy issue still seeking solutions and medical malpractice continues to represent a challenging and prominent topic for both scholars and policymakers.[15]

As noted by Sloan and Chepke (2008), the complexity of medical malpractice is largely due to the fact that its effects reach a number of different categories of subjects. This phenomenon does not simply concern healthcare providers and malpractice insurance companies, but it also affects patients and, at the same time, it draws the attention of the legal system and of policymakers (i.e. governments) in general. High insurance rates and difficulties in finding appropriate coverage impact directly on clinicians and on their medical decisions. For example, in the attempt to protect themselves from litigation, physicians may decide to over prescribe medical examinations or to refrain from more complex procedures. Such decisions diverge from the optimal medical choices based on the pursuit of solely the patients' interest and impact on the final composition of the medical services received by patients, as well as on the functioning of the health system in terms of both quality of medical provision and health expenditure. These consequences may raise concerns in both suppliers and users of healthcare, who may end up calling for government intervention. Patients may be unsatisfied with the performance of the system, while clinicians may believe they are not sufficiently protected in order to perform well in their profession. At the same time, it is the liability

[14]Grembi (2012), p. 90.

[15]See, for instance, Mello (2006a), Mello et al. (2010), Kessler (2011) and Olsen (1999).

regime that determines how and when injured parties may resort to litigation. Therefore, it is the legal system that may favor or discourage malpractice suits and compensation requests. A more or less favorable legislation towards patients impacts both the number of claims filed and the size of payouts. Yet, by affecting these two elements, the liability regime modifies the malpractice pressure faced by physicians, as well as the perception of insurers about the riskiness of the malpractice insurance business. In other words, the impact of medical malpractice on one stakeholder group or the reaction of one group to this phenomenon triggers additional effects on the others. Hence, medical malpractice affects a number of different areas (i.e. healthcare sector, insurance market, tort system and government activity) each of which has its own objectives and constraints. Even though these areas are distinct from each other, in practice they interact, consequently influencing each other and making medical malpractice a particularly complex topic.

Medical Malpractice Insurance and the Related Market

Medical professional liability insurance falls into the wider category of property and casualty insurance. Property and casualty insurance covers a broad range of different policies. It basically protects an insured individual or business against property loss and/or legal liability for losses negligently caused by injuring another person or by damaging her property.[16] The most well-known and basic form of property and casualty insurance is motor vehicle liability insurance. However, even if automobile liability and malpractice insurance belong to the same broad category, they differ substantially from each other. Furthermore, medical professional liability has some distinctive features that clearly differentiate it from the other lines of property and casualty insurance. For instance, a critical aspect for insurance, such as the the segmentation of high-risk from low-risk purchasers, becomes even more difficult to address when it comes to medical malpractice coverage and this has important consequences for the insurance rates applied.

In the market for medical malpractice coverage, insurers act as suppliers offering coverage to the customers represented by healthcare providers (e.g. doctors and hospitals) at a certain premium. The pricing of insurance rates is a key issue that entails a high degree of uncertainty since it is based on estimates of both the probability of a future loss and the size of this loss. Generally speaking, insurance permits the shifting of an indefinite risk from an economic entity to another for a definite premium which should at least be equal to the actual value of any future loss weighted by the estimated probability of this loss.[17] Similar to any other property and casualty insurance line, malpractice premiums should cover the expected cost of losses and the expenses of the insurance company for issuing and administering the policy, plus the profit rate sought by insurers.[18]

[16] See, Sloan (2003), and Nordman et al. (2004).

[17] Webel (2005). In other words, the premium set by insurers should at least be equal to the so-called 'actuarially fair premium', which is precisely insurers' expected loss (i.e. the loss times the probability of its occurrence).

[18] In addition, premiums are also influenced by the expectations of insurers on future investment gains or losses. See, Mello (2006b) and Nordman et al. (2004). In fact, much of the capital received as premiums

In theory the setting up of premiums occurs on the basis of the risk transferred by the insured to the insurer, who therefore should apply a different insurance rate to subjects with diverse inherent degrees of risk.[19] Traditionally, to facilitate insurance pricing, insurers classify insured individuals according to their risk of incurring a loss into different groups and then assign a premium to each of these groups.[20] However, this operation turns out to be a complex task, which posits greater difficulties with respect to medical liability insurance than to other types of coverage. For example, automobile insurance is characterized by high claim frequency and low claim severity. Therefore, there are many compensation requests per insured individual, but the payouts per compensation request are limited. This is an important aspect, because claims act as signals for insurance companies of the conduct of their policyholders, of the judicial treatment of liability and of the award of compensations.[21] Hence, a high frequency of claims enables insurers to rank rather precisely their policyholders based on their probability of incurring a loss. On the contrary, malpractice claims show a low frequency often combined with relatively higher amounts. This makes it more difficult for insurance companies to rank healthcare professionals according to their risk of being involved in litigation. The result is that, as a matter of fact, insurers have sparse information to evaluate the quality of a provider and to determine the risk of a malpractice claim.

The claims experience of policyholders is usually exploited by insurers also to adjust current premiums.[22] The information on past losses and expenses, and on the past experience of healthcare providers in general, are extremely important. Still, medical professional liability is much less experience-rated than other types of insurance (e.g. motor vehicle liability or workers compensations).[23] This is due to the low frequency of legal disputes and to the fact that there are no fully reliable mechanisms for insurers to monitor the quality of the medical services offered and track the claims history of healthcare providers. As a result, risk segmentation is usually performed on a geographical basis and according to medical specialty, and rarely using individual measures of a purchaser's quality or information on her malpractice claims history.[24] Specifically, malpractice insurers are able to make use of experience rating only with respect to hospitals since the claims history of an healthcare organization is more stable over time compared to that of individual physicians. However, even in the case of hospitals, experience rating plays a partial role in the setting of insurance rates, which

for bearing the risk is usually invested by insurance companies that may act also as financial intermediaries. Specifically, according to Mello (2006b), the portfolios of insurance companies are fairly similar and usually include about 80% of bonds, 10% of stocks, and 5-10% of cash and other minor investments.

[19] Webel (2005).

[20] See, Danzon (1991), and Webel (2005).

[21] See, Sloan (2003).

[22] Danzon (2000).

[23] As stressed by Fournier and McInnes (2001), experience rating entails two main benefits "*(1) cross-subsidization of high-risk subscribers by those subscribers of low risk is reduced and (2) high-risk subscribers are given incentives to find cost-effective ways to reduce risk.*" For a discussion on the applicability and consequences of experience rating in the case of medical malpractice insurance, see Sloan (1990) and Danzon (2000).

[24] See, for example, Mello (2006b) and Danzon (2000). In particular, according to Danzon (2000), "*Premiums are a multiplicative function of limits of coverage (for example, $1 million per occurrence, $3 million total for the policy year); medical specialty; and geographic location.*"

traditionally result in being experience-rated for less than 25% of their amount.[25]

Another important characteristic of medical malpractice is the so-called long 'tail'. The consequences of medical errors or alleged errors and the compensation requests that arise from them can materialize after several years. In particular, they can materialize even after the end of the insurance period. Conversely, for instance, in automobile liability the time elapsed between the occurrence of an accident and damages payout usually is quite short. This feature of malpractice coverage makes it harder for insurance companies to predict with a reasonable degree of accuracy the expected future loss especially with respect to single practitioners.[26] In fact, on the one hand, it is difficult for insurance companies to determine how many suits will be eventually filed in any given year.[27] On the other hand, "*using data on relatively few claims, a medical malpractice insurer must estimate the likelihood that a jury far in the future will hold the defendant liable, and the amount that jury would award in damages.*"[28] This also makes the adjustment of insurance rates more difficult. In addition, the rules applied to a claim are, in principle, those existing at the time of the alleged injury. Nevertheless, social and legal norms may change over time and these modifications "*may simultaneously affect the loss distribution on all outstanding claims, spanning several policy years and possibly multiple lines of insurance.*"[29] This translates to an element of aggregated undiversifiable risk, which is specific to the reference coverage. In other words, this determines further uncertainty for insurance companies in estimating future losses and, more in general, in predicting how the malpractice business will evolve (e.g. variation in claims frequency or modifications of liability rules).[30] Finally, aside from the uncertainty on the potential number of filed suits, there is also the uncertainty related to the severity of these claims as the range of compensation that victims can potentially receive is quite large even in the hypothesis of similar injuries.[31] This further element contributes to exacerbate the difficulties faced by private companies to insure the risk of malpractice.

To address these problems, insurers are increasingly shifting from occurrence-based liability insurance coverage to claims-made liability insurance coverage. According to the former the policyholder is covered for all the incidents that occurred during the policy year independently of when the compensation request is presented. By contrast, the latter assures coverage only of the claims actually filed during the insured period regardless of the timing of

[25] Mello (2006b).

[26] In any case, the fact that malpractice claims usually require a long time before being compensated may also have a positive, even if minor, implication for insurers. In fact, as noted by Nordman et al. (2004), the long timescales of malpractice litigation constitutes a greater chance for insurance companies to yield investment incomes, which are useful especially to offset the underwriting transactions of insurers. In addition, the authors specify that "*insurers are able to invest amounts held in surplus, unearned premium reserves and loss and loss adjustment expense reserves.*"

[27] See, OECD (2006).

[28] Sloan and Chepke (2008), p. 225.

[29] Danzon (2000), p. 1363.

[30] For instance, Danzon (2000) stresses that one of the drivers of the dramatic increase in the number of malpractice suits in the 1970s and again in the 1980s in the U.S. were precisely the changes in social and legal norms. Insurers have been unable to predict these changes, thus they were under-reserved and suffered significant shocks to their insurance capacity.

[31] See, OECD (2006).

occurrence of medical accidents. As a result, there is a progressive shift of risk from private insurance companies to healthcare providers, which negatively impacts on how much healthcare providers pay to be insured and on the risk exposure they cope with.[32] Claims-made policies imply a long tail of exposure for those medical errors that have not yet led to the filing of a suit. This means that providers may have greater difficulties in finding appropriate coverage if they need or want to change insurance company. First, if they cannot immediately switch from one insurer to another, they will have to retain the risk of the claims belonging to the mentioned long-tail. Second, in order to cover these errors healthcare providers may have to buy additional tail policies or to pay higher premiums to the new insurer.

Summing up, medical professional liability insurance is characterized by some specific features such as the difficulty in distinguishing between high-risk and low-risk healthcare providers and the long duration of claims that exacerbate the risk faced by insurance companies. As a result, over time this type of insurance has proved to be a particularly problematic sector for private insurers and malpractice crises have had the effect of further increasing the difficulties of insurance companies to operate in this market. In particular, the main impact on the insurance market caused by malpractice crises consists of a further increase in insurance rates and in a reduction of the availability of these policies.

The Tort System for Medical Malpractice

Among the several objectives pursued by tort law, the two primary goals are deterring individuals from engaging in negligent behaviors and compensating injured parties for the damages suffered due to the negligence of others.[33] With respect to medical malpractice, this implies that the medical liability system should be able to provide healthcare professionals with the correct incentives to apply standard levels of precaution and to avoid negligent accidents. On the other hand, it should also assure the compensation of victims of malpractices cases.

Specifically, malpractice law based on fault imposes on healthcare professionals the duty to comply with a specific legal standard of care, whose breach gives rise to negligence of the professionals. As a consequence of their negligent conduct, healthcare providers are considered liable for any damage caused to the patient. Theoretically, this system works efficiently since

"*the courts step in to provide compensation and deterrence in cases in which self-regulation has failed to prevent a breach of accepted standards of care; plaintiffs' attorneys serve as gatekeepers, separating meritorious from unpromising claims; and liability coverage ensures that providers are not bankrupted by a single large payout and that resources are available to compensate patients.*"[34]

In reality, however, the functioning of the malpractice system is more complex and the actual effectiveness of the law for medical malpractice in ensuring the above-mentioned objectives has raised major concerns among scholars.[35]

[32] See, for example, Mello et al. (2006b), Nordman et al. (2004), and Danzon (2000).

[33] See, for example, Miceli (2004).

[34] Studdert et al. (2004), p. 284. See, also Burkle (2011).

[35] A number of studies have been devoted to examining the different alternatives to a negligence liability

In particular, there is still no evidence that the threat of a civil lawsuit discourages medical injuries.[36] Moreover, two aspects of the malpractice system generally subject to criticisms are the long duration of legal disputes[37] and the high level of expenses involved in the litigation process.[38] At the same time, the system is not foolproof. So that, though not frequent, it may happen that a negligent healthcare provider is found not liable. Whilst, it may also, and more frequently, occur that a non-negligent provider is brought to court with the risk of being found liable and the inevitable burden of bearing the costs entailed in a legal dispute.[39]

In addition, a common perception is that the system falls short also in its capacity for assessing the damages for the victims of malpractice. Besides the extreme position of those who claim that malpractice compensations are substantially the result of a random process,[40] there is the widespread belief that these compensations substantially fail to satisfy criteria of fairness.[41] On the one hand, injured parties, who suffered similar damages, end up obtaining quite different awards. On the other hand, others receive compensations that appear not to be commensurate with the severity of the health impairment experienced.[42]

The most general concern arises with respect to the quantification of noneconomic damages. In deciding the compensations to grant to victims of medical malpractice, the tort system has to quantify both the economic and the noneconomic damages suffered by injured parties.[43] However, given its non-monetary nature, this latter component of damages is more subjective and problematic to estimate.[44] As a result, the capability of the tort system of quantifying non-pecuniary losses has been repeatedly questioned as different juries and/or judges belonging to the same state, area, if not even the same city, reach widely diverging decisions on the amount of damages to award. Traditionally, this variability has raised major concerns as it increases the unpredictability of malpractice claims with possible negative effects on the credibility of the compensations system (i.e. on the deterrence function of the tort system), on the liability insurance system as a whole and on the insurability of malpractice risk.[45]

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rule and their results in terms of optimal deterrence with respect to medical malpractice. See, for instance, Epstein (1988) and Weiler (1991).

[36] By contrast, evidence on the deterrent effect of tort law is available with respect to other legal areas such as motor vehicle liability, see Dewees et al. (1996) and White (2004). For instance, according to Localio et al. (1991) only 2% of adverse events are actually followed by the filing of a claim against the healthcare provider.

[37] See, Kessler (2011) and Cohen and Hughes (2007).

[38] Studdert et al. (2006). For instance, Danzon (2000) stresses the high transaction costs of the U.S. system. Specifically, for each single dollar paid in malpractice premiums, victims receive only about 40 cents.

[39] Hyman (2002).

[40] U.S. Department of Health and Human Services (2002).

[41] See, for instance, Studdert et al. (2011).

[42] See, for example, Bovbjerg et al. (1989).

[43] For a more detailed discussion of the notion of noneconomic damages, and of the problem related to their assessment, see Chapter 3.

[44] Webel (2005).

[45] See, Bovbjerg et al. (1989).

The Healthcare System

Aside from the criticisms that have emerged with respect to the tort system for medical liability, medical malpractice has aroused concerns also about its possible effects on the healthcare system in terms of both costs and access to medical care.[46] Firstly, physicians may respond to higher insurance rates by increasing medical fees, that is, by passing malpractice costs on to patients.[47] Secondly, the malpractice system should lead physicians and, more in general, healthcare providers to undertake appropriate levels of care against iatrogenic injuries. Still, in practice the system may for various reasons perform poorly, leading to over- or under-deterrence.

As discussed by Sloan and Chepke (2008), the asymmetry of information that characterizes the relationship between doctors and patients, may cause the phenomenon of under-deterrence. In theory, malpractice law should avert under-deterrence by allocating the burden of iatrogenic accidents to doctors. Moreover, medical professional liability may also produce the opposite effect, that is, it may provide incentives for excessive care.[48] In fact, if the legal standard of precaution is uncertain or too strict,[49] healthcare providers may be induced to over-perform or over-require diagnostic and/or therapeutic treatments to limit the risk of litigation. For the same reason, they may also decide to refrain from certain types of treatments or cases that involve higher chances of legal disputes.

Both these types of behavior are an expression of the wider phenomenon of defensive medicine according to which healthcare providers adopt defensive practices that are not beneficial – or only to a limited degree beneficial – to patients. Hence, under these circumstances, clinicians do not primarily make these decisions in the interest of patient's health, but rather with the intention of avoiding malpractice litigation.[50] This interpretation allows us to distinguish between the two supra-mentioned types of defensive conduct that doctors can undertake. These conducts are defined as positive and negative defensive medical practices. In particular, physicians adopt positive defensive medicine when they perform additional tests and diagnostic and/or therapeutic procedures mainly in order to limit their malpractice exposure. Conversely, negative defensive medicine occurs when healthcare providers avoid certain patients or medical treatments, that entail a high probability of malpractice claims in order to reduce the risk of being sued. In any case, the fact that physicians want to reduce their risk exposure to malpractice litigation impacts on their behavior. The decisions about the medical procedure to perform are influenced by factors other than patients clinical conditions with potential negative effects on patients' well-being, on the resource allocation within

[46] See, Zuckerman et al. (1986).

[47] See, for example, Danzon (1991) and Sloan (1982).

[48] Kessler (2011).

[49] Craswell and Calfee (1986).

[50] For the present work, therefore, we resort to the interpretation followed by Kessler and McClellan (1996) and related studies, which is also the one generally accepted under a policy perspective. For instance, an effective example of how defensive medicine is traditionally interpreted in the policy context is contained in the 1994 report written by the U.S. Office of Technology Assessment (OTA): "*defensive medicine occurs when doctors order tests, procedures, or visits, or avoid high-risk patients or procedures, primarily (but not necessarily solely) to reduce their exposure to malpractice liability.*"

the healthcare sector, on medical care provision, on public consensus, and on healthcare expenditures.

Finally, complaints about the malpractice system concern also its possible negative effects on patient safety. Instead of reducing iatrogenic injuries, a liability system where the doctors' fear of litigation is high, may actually hinder patient safety initiatives.[51] For example, patient safety movements strongly encourage healthcare professionals to engage in activities such as adverse events reporting to foster the understanding of medical errors and their causes. Nonetheless, physicians may be reluctant to disclose this information, because they may fear that the same information can be later used in a trial or acquired by insurance companies making it more difficult to find appropriate malpractice coverage.[52]

Government Intervention

The widespread perception of a malpractice crisis has prompted public intervention to reform the law for medical malpractice. Traditionally, as noted by Studdert et al. (2004), policymakers have focused their attention on three main types of intervention.[53]

A first category of reforms aims at limiting the recourse to lawsuits in order to foster alternative methods of resolution and discourage individuals from presenting unmeritorious claims. These measures include the imposition of shorter statues of limitation, that is, the time within which legal proceedings may be brought after that the injury has been detected. Another possible intervention is the introduction of screening panels ('review boards' or 'conciliation panels'). In their basic form, these panels are boards composed of different types of professionals – including physicians – with the task of examining the evidence of a malpractice case to evaluate whether the case has sufficient merit to go to court.[54] Further measures to prevent plaintiffs from presenting unmeritorious claims are the introduction of certificates of merit and the imposition of limitations to attorney fees. The former requires injured parties to obtain, before or immediately after the claim is filed, a certificate from a qualified medical expert attesting the merit of the case in order to proceed to court.[55] Differently, the latter imposes a limit on the portion of damages that the attorney of the plaintiff can receive as contingency fee. Its rationale is to induce plaintiffs' attorneys to refuse cases with minor or no merit by modifying their incentives in investing in a case.[56]

A second category of public interventions examines the possible variations of liability rules in order to lower the frequency of malpractice lawsuits and the actual size of defendants' payouts. In this sense, a reform proposal is to modify the 'collateral-source rule'. This measure allows the deduction from the compensation that must be paid to the plaintiff, of any amount received by the plaintiff herself, as compensation for the injury suffered, from

[51] See, for instance, Liang (2000) or Studdert et al. (2004).

[52] Mello (2006b).

[53] For a detailed discussion of the different possible tort reforms and their potential effects, see Mello and Kachalia (2010).

[54] See, Eggen (1990) and (2013).

[55] See, for example, Parness and Leonetti (1997).

[56] Mello and Kachalia (2010).

other sources (e.g. health insurance).[57] A reduction of claim frequency can be also obtained by foreseeing stricter standards for demonstrating violations of informed consent or, more in general, lower legal standards of care. Differently, in order to decrease the payouts of defendants, a possible reform consists in the elimination of joint-and-several liability. So that, in cases with multiple defendants, the financial liability of each defendant is commensurate with their respective share of responsibility for damaging the plaintiff.[58]

A third category of reforms focuses on the reduction of the size of the compensation awarded to injured parties. In this regard, the intervention that has attracted the most attention is the imposition of caps on damages and all its different configurations (i.e. flat caps, tiered caps and schedules).[59] An alternative reform to damages caps are periodic payments. This measure enables or obliges insurance companies to repay damages over a longer time frame and not in a lump sum. In this way, insurance companies can buy annuities from other insurers "*which cost less than paying the entire award up front. Insurers are also able to retain any amounts that the plaintiff does not actually collect during his or her lifespan.*"[60] Hence, the argument in favor of periodic payments is that they help insurance companies to level their expenses on a longer time frame and to buy annuities.

Empirical research on the effects of tort reforms on the main determinants of malpractice pressure and, thus, of medical malpractice crises (i.e. the frequency and severity of malpractice suits and malpractice premiums) supports two main considerations. On the one hand, policy interventions directly aimed at limiting the expected compensations are those that generally yield better and stronger results in terms of reducing the variability and average size of malpractice payouts and of lowering insurance premiums. In particular, this is the case of caps on damages, which are commonly believed to reduce average payouts and insurance rates.[61] Whilst, on the other hand, those reforms that do not directly deal with the magnitude of malpractice awards have proven to be less effective in coping with malpractice and to lead to less consistent results.[62] For example, pre-trial screening panels turn out to have substantially no effect on the frequency of malpractice claims and, consequently, also on insurance rates.[63] Similarly, there is no strong evidence of an actual effect on the number and size of filed claims, as well as on premiums, with respect to the limitation of attorney fees, the modification of the collateral-source rule and the elimination of joint and several liability.[64] Conversely, one 'indirect' tort reform that has been found to be actually capable of effecting insurance rates, is shorter statute of limitations.[65] Nonetheless, the impact of

[57] See, Mello (2006a).

[58] See, for instance, Viscusi et al. (1993).

[59] For a more detailed discussion of the characteristics and functioning of the different types of caps, see Chapter 3.

[60] Mello and Kachalia (2010), pp. 19-20.

[61] See, Kessler (2006) and Mello and Kachalia (2010). By contrast, the effects of periodic payments have not been extensively investigated, thus the evidence available is too limited to reach some general conclusions.

[62] Kessler (2011).

[63] See, for instance, Zuckerman et al. (1990) and Eggen (2013).

[64] With respect to the limitation of attorney fees and the elimination of joint and several liability, see Waters et al. (2007), whereas see Born et al. (2009) in relation to the collateral-source rule.

[65] See, for example, Blackmon et al. (1990) and Kilgore et al. (2006).

this measure on the frequency of claims remains uncertain given the evidence available.[66]

Structure of the Dissertation

In the last two decades, the law and economic literature has devoted much attention to medical malpractice and its implications. Specifically, its most significant contribution has consisted in the empirical analysis of both the functioning of the malpractice system (e.g. claim frequency, size of compensations, insurance premiums) and of the possible malpractice tort reforms. In particular, a large body of research has focused on the American context, which has experienced the most heated policy debate and with respect to which data is more easily and widely accessible.[67] On the contrary, studies on civil law countries, as well as on public healthcare systems, are much more limited. The present thesis aims at contributing to the investigation of medical malpractice and malpractice reforms in a civil law jurisdiction with a public national health system, using Italy as case-study and, at offering some policy recommendations.

In particular, we examine the adoption of caps on noneconomic damages – the tort reform usually identified as the most effective to cope with medical malpractice crises – by providing both an institutional analysis of the specific context of implementation of this policy and an empirical evaluation of its effects. We do not consider flat or tiered caps, but a more complex and less studied type of ceilings: schedules of noneconomic damages. The broad research question consists, therefore, in investigating the effects of this reform in an institutional framework where the vast majority of claims are settled before courts and healthcare services are mainly provided through public facilities. This question translates in the analysis of two more specific ones. The first question we want to answer is how limiting compensations for pain and suffering through schedules impacts on the attractiveness of the malpractice insurance market both in terms of the presence of private insurers in the market and of insurance rates paid by healthcare providers. By limiting the compensation obtainable by victims, scheduled damages are commonly expected to yield lower malpractice premiums and to also facilitate the evaluation of insurers' risk exposure. This last expectation can be interpreted as an increase in the attractiveness of the reference line of insurance for private insurers, thus it should consist in an increase in the number of companies offering malpractice coverage. In other words, our first purpose is to verify whether, and to what extent, schedules of non-pecuniary losses are actually effective in achieving the results for which they are designed. In this way, we are also able to shed light on the elements affecting the decisions of private insurers in malpractice markets.

Schedules, however, do not solely affect insurance companies. A policy that limits the awards received by injured parties may modify the degree of malpractice pressure perceived by physicians. In response to such a change, healthcare providers may vary their medical decisions leading to a more or less frequent use of defensive medicine. Consequently, the second

[66] See, Mello and Kachalia (2010).

[67] The American National Practitioner Data Bank – an information clearinghouse created by the U.S. Congress – requires every healthcare provider, who pays for a malpractice case, to submit a report on the malpractice payment itself.

research question aims at investigating whether, and to what extent, healthcare providers react to the implementation of schedules by modifying their medical decisions. This second strand of analysis, therefore, provides additional insights on the functioning of schedules, improving the understanding of those effects that go beyond the primary scope of this policy intervention. The examination of the relation between malpractice pressure and the levels and composition of healthcare provision is particularly significant from a policy perspective. Furthermore, this aspect becomes especially relevant in a public healthcare system such as the Italian one, since the general considerations drawn from the study of the U.S. experience cannot be automatically generalized to such a context. The fact that care delivery by public hospitals may be affected by the degree of malpractice risk has direct consequences on the functioning of the system with possible effects on healthcare expenditures and on the fairness and equity of the public provision of medical care.

In order to perform both these analyses, we study the specific features of both the Italian healthcare and judicial systems in order to identify and highlight the main peculiarities of this institutional framework and to better appreciate the channels through which malpractice pressure works in such a context. Without fully understanding these aspects, it would not be possible to properly evaluate the empirical findings and to discuss their possible policy implications. In this perspective, the institutional analysis is important also to support the empirical approach and tailor it to the specificities of the reference case.

From an empirical perspective, the novelty of this work is twofold. First, it studies a system of schedules of compensations for levels of damages rather than simple flat caps. Second, it includes in the empirical analysis the performance of the judiciary, measured as the civil backlog of courts. Traditionally, tort reforms have been analyzed regardless of the performance of the institutional framework in charge of their implementation. Differently, our expectation is that the functioning of the judiciary alone is capable of influencing the main players of the malpractice system (i.e. physicians, injured parties and insurance companies). The fact that a court can dispose a proceeding in a longer or shorter time provides different incentives to injured patients to initiate a legal dispute. At the same time, a more or less well performing judiciary may exacerbate or weaken the risk of litigation perceived by healthcare professionals with possible effects on the level of precaution undertaken by clinicians and on the number of medical accidents. Private insurance companies may consider judicial slowness as a positive element that allows them to invest the premiums collected for a longer time. However, they may also consider it as a threat that makes it more difficult to estimate when and how many damages they will have to pay, exacerbating the assessment of their risk exposure. To improve the understanding of these dynamics is useful not only to study the impact of noneconomic damages schedules, but also to gain greater knowledge on the channels and mechanisms through which medical malpractice may work in a public healthcare system.

Specifically, the thesis is organized as follows. Chapter 2 offers an overview of the organization and functioning of both the Italian healthcare and medical liability systems. Italy is characterized by a publicly financed health system financially distressed and with a strong planning component. In such a system, most clinicians are public employees, thus they work in hierarchically organized structures and are entitled to receive medical malpractice coverage as part of their employment contract. Similar to the majority of European countries, Italy

does not have a specific statute law regulating doctors liability, but the latter is interpreted as a contractual liability and medical malpractice claims are decided according to a fault system.

Besides discussing the rationale and the possible forms and effects of noneconomic damages, Chapter 3 describes the evolution and the introduction of noneconomic damages schedules in the Italian legal context. In this respect, the important features of the Italian case are the type of ceilings applied (i.e. schedules of noneconomic damages) and its process of implementation. In fact, there has not been a policy intervention of the national government. On the contrary, there has been a staggered adoption – courts decided at their discretion whether and when to adopt these limitations – which allows us to benefit from a quasi experimental setting and to rely on a Difference-in-Differences approach.

Chapter 4 presents an assessment of the impact of schedules on the number of insurers operating in the medical liability market for hospitals and on the premiums paid by public facilities. Using Italian healthcare providers data, we exploit the scattered timing of schedules implementation and find that the latter increases the attractiveness of the medical liability insurance market, measured as the number of insurers, while they do not produce significant effects on paid premiums. We also evaluate the impact of schedules, while controlling for the performance of the judicial system, measured as courts' civil backlog. Our findings show that the introduction of schedules increases the presence of insurers only in inefficient judicial districts. Courts' inefficiency is attractive to insurers for average values of schedules penetration of the market, with an increasing positive impact of inefficiency as the territorial coverage of schedules increases. For the purpose of this study, we construct a comprehensive database containing all public procurement procedures for malpractice insurance contracts that have been run by Italian public healthcare providers during the period 2000-2010. The result is a unique and new dataset that combines three types of information: the data on public tenders, those on the characteristics of public healthcare providers and those on the performance of the judicial system. A description of public procurement functioning and legislation in the Italian context is presented as well.

Chapter 5 extends the empirical analysis on the effects of scheduled damages by examining the reaction of public healthcare providers to this legal intervention. Specifically, we investigate how public hospitals vary the composition of their activities in response to the introduction of schedules. Given the specificities of a public healthcare system, medical liability may actually affect physicians working in public facilities through different channels and with a different intensity compared to their privately employed colleagues. The former, in fact, do not face just the constraints provided by medical liability, but they have to deal also with the internal policies and objectives imposed on them by public regulators. In addition, they do not directly bear the cost of malpractice litigation and coverage, since the healthcare facilities themselves are in charge of the acquisition of malpractice insurance for all their medical staff. Consequently, publicly employed physicians not only may be affected by malpractice pressure in a different way, but they may also tend to react differently than they would do in a contracted market. For instance, the aspects of medical provision that they can affect are likely not to coincide with those primarily chosen by privately employed doctors. Our findings point out the existence of both a hospital- and ward-wide reaction to

changes in medical liability caused by the introduction of schedules of non-pecuniary losses. Specifically, the implementation of the reference policy tends to reduce the use of defensive practices on the part of clinicians, but the magnitude of this impact is ultimately determined by the efficiency of the court in charge of schedules implementation. So that, a poorer judicial performance (i.e. higher backlog) usually attenuates the effects of schedules introduction, while, by contrast, a higher level of judicial efficiency (i.e. lower backlog) tends to intensify it. As for the specific measures of healthcare delivery affected, we identify a positive and significant relationship between the introduction of schedules and the preoperative length of stay at both the hospital and ward level. On the contrary, a negative relation is detected between the overall length of stay and the reference policy at the ward level. This means that once malpractice pressure is lowered, clinicians tend to reduce patients' length of stay, but to increase the preoperative one. Again, the analysis is performed using a dataset that has been constructed for the specific purposes of this study by combining information on the characteristics and activity levels of Italian public hospitals and information on the performance of the judiciary for the years 2000-2010.

Chapter 6 discusses the main findings and concludes. In particular, it offers some remarks on the effectiveness of the reference policy in coping with high malpractice premiums and on the possible difficulties of healthcare providers in contracting out insurance coverage against third party liability. Finally, it also discusses the possible policy implications and risks for the health system entailed by the fact that public hospitals do actually modify the composition of medical provision in response to changes in malpractice pressure.

Chapter 2

Medical Malpractice and Liability in Italy

2.1 Introduction

In Italy, especially over the last two decades, medical malpractice has attracted much attention from both policymakers and public opinion and has contributed to raise serious concerns about the stability and future of the national healthcare system itself.[1] The main cause for this interest lies in the sharp increase in medical malpractice claims and its negative impact on the premiums paid by public and private healthcare providers. Both medical institutions and individual physicians have started to complain strongly and publicly about the increasing trend of insurance rates and the related difficulties of subscribing to a policy.[2] This has raised the problem of possible negative effects on the provision of medical care and on the conduct of physicians. However, these phenomena can be better understood when analyzed within the more general context of the Italian healthcare system and of the liability regime applied to health professionals, whose features are discussed throughout this chapter.

Both the incentives and the constraints to which clinicians are subject, are ultimately determined by the environment in which they operate. Clearly, a main determinant of the malpractice pressure faced by doctors is the liability system. An overview of the norms regulating the patient-physician relationship tells us how the risk of litigation works, its possible implications for doctors, and also the possible actions that can be undertaken by victims in order to be compensated for the damages suffered. At the same time, additional incentives and constraints on the medical profession are provided by the organization and functioning of the health system itself. A public system responds to different objectives compared to a privately funded one. This aspect influences the functioning of healthcare facilities and the activity of doctors, who, for instance, are provided with more protection

[1] OECD (2006).

[2] For instance, on February 12, 2013, gynecologists and obstetricians went on strike to protest against the dramatic increase in malpractice litigation. This has been followed in July by a general strike against the extremely high premiums required by private insurers and the significant difficulties in finding malpractice coverage.

(e.g. malpractice coverage), but have also greater obligations (e.g. public nature of their job) than privately employed colleagues. Therefore, in dealing with the consequences of medical malpractice, the specific institutional framework of reference matters and an overview of its specificities is important to understand through which channels this phenomenon works and may exert its effects. In this study, this is even more important since we are studying an institutional context that widely differs from the U.S. one (i.e. the main case study in the related literature).

In particular, the Italian healthcare system established in 1978 provides universal medical care coverage to the whole population and is characterized by a predominantly public nature. Healthcare services are provided through a mix of public and private facilities. In practice, private providers may be contracted with the health system to treat patients for free, being reimbursed by the public healthcare provider the patient belongs to. Otherwise, they may operate independently from it, requiring patients to directly pay for the services received. In this case, patients mostly pay out-of-pocket, although some citizens also benefit from private supplementary insurance to cover such expenses. As a result, the purely private provision of healthcare is quite limited to the extent that, in 2011, only 22% of healthcare expenditure has been financed by private sources.[3]

The existing organizational and management structure of the system comprises three levels of government: central government, regional government and local health units assisted by public and private accredited hospitals at the local level. Local health units are financed through a capitation formula and are in charge of the actual provision of medical care services to the population, which are basically free of charge at the point of delivery. Differently, the other two levels of authority are substantially responsible for the administration and financing of the whole system. In particular, the central government represented by the Ministry of Health is tasked with the national planning, while each regional government elaborates and defines its own regional plan based on the national one. The system is almost completely publicly financed with a national healthcare budget in which both central and regional resources converge. This budget is set by the central government, but in practice, it is the outcome of the bargaining between the state and regions. The financial responsibility is shared between these two levels of authority, but regions contribute to the national financing needs to different extents depending on their fiscal capacity.

In an effort mainly to contain costs and pursue principles of fiscal federalism, the Italian healthcare system has undergone a process of progressive regionalization whereby regions have gained increasing administrative and financial responsibilities over time. However, this greater regional autonomy has been promoted in a context still characterized by significant demographic and economic inequalities that result in a substantial north-south divide. These differences have affected also medical care services causing a cross-regional flow of patients moving from the south to the north especially to receive high-level care in tertiary hospitals.[4] Decentralization and the subsequent regional autonomy have resulted in making it more

[3] OECD (2013). This figure includes, for examples, co-payments, the expenses for pharmaceuticals and for medical equipments, thus the share of hospital care privately financed is actually lower than 22%.

[4] Lo Scalzo et al, (2009), p. 120.

difficult to impose a hard national budget constraint and in undermining uniformity of health care provision given the different models of governance implemented by regions.[5]

In such a context, there is no specific regulation governing the doctor-patient relationship, which is actually treated as a contractual relationship. Therefore, medical negligence is considered as the failure to comply with a contractual obligation, rather than a breach of a general duty of care. This approach has been sometimes identified as one of the causes of the high number of malpractice claims in the country.[6] In practice, an injured party has to allege that the doctor violated her contractual obligation and, then, it is up to the doctor herself to prove the opposite. Specifically, the physician needs to demonstrate that she complied with the standard of care of the '*bonus pater familias*'. Once the breach is assessed, the injured party is entitled to be compensated for any loss derived by the harm experienced.

The focus of the analyses developed in the following chapters is on the Italian institutional framework. As we will see, the public nature of the Italian healthcare system makes it easier to describe and analyze some of the deficiencies and difficulties suffered with respect to medical malpractice insurance. At the same time, given its peculiar organizational structure, this system represents a good case study to evaluate the consequences of medical malpractice not only on the behavior of independent practitioners, but on the conduct and choices of healthcare facilities as well. Accordingly, the present chapter has the main purpose of providing an overview of both medical professional liability and the organization and functioning of the health system in Italy. Specifically, the chapter is structured as follows: Section 2.2 describes the evolution and main characteristics of the Italian Healthcare system, while Section 2.3 presents the national judicial framework with respect to medical liability. Finally, Section 2.4. concludes by discussing the medical malpractice emergency that Italy is experiencing with respect to malpractice litigation, professional liability insurance and doctors' behavior.

2.2 The Healthcare System

The existing Italian healthcare system is the result of a series of reforms that have affected both the organization and funding of medical care provision. These reforms have prompted a progressive regionalization and, consequently, an increasingly limited role of the central government in healthcare policy (Table 2.1).[7]

The Italian National Health Service system (NHS) was established in 1978[8] on the model of the British National Health Service to replace a social insurance system ruled by principles of selective insurance, whereby citizens received coverage from employment and sickness funds according to their occupation.[9] Before 1978, the right to health protection was determined by being a worker (or relative of a worker) rather than being a citizen and the coverage differed according to the insurance fund the worker belonged to. At the beginning of the Seventies,

[5]Fiorentini et al. (2008), p. 210.
[6]DiMarzo (2012), p. 54.
[7]Doetter and Götze (2011), p. 2.
[8]Law December 23, 1978, n. 833.
[9]See, Doetter and Götze (2011), Mapelli (2011).

Table 2.1: Variables definition and sources

Period	Legislative Intervention	Main Changes
1978	Law 833/1978	Establishment of the National Health Service
1992/1993	Legislative Decrees 502/1992 and 517/1993	Creation of the internal market following the British example, separation between purchasing and delivering functions, promotion of competition
1999	Legislative Decree 229/1999	A further step of the regional devolution process and promotion of cooperation rather than competition between private and public providers
2000	Legislative Decree 56/2000	Complete regionalization of financing and replacement of the National Health Fund with the National Equalization Fund
2001	Constitutional Law 3/2001	Regions' exclusive responsibilities in the organization and provision of healthcare services
2006	Law 266/2006	Introduction of repayment plans for the regions with high and systematic deficit
2009	Law 42/2009	Introduction of the 'standard cost' criterion in place of the 'historical expense' criterion to determine regional funding (Fiscal federalism)

the country had almost 100 funds each of which followed its own rules and regulations. Some had their own healthcare facilities to offer direct medical services; others relied on a system of reimbursement of patients for the services received by private doctors and facilities.[10] This resulted in a highly fragmented organization of healthcare and in significant inequalities among the population with an approximately 7% of citizens uninsured.[11] In the mid-1970s the widespread dissatisfaction combined with the status of bankruptcy of many insurance funds and the rapid growth of expenditure led to a rethinking of the entire healthcare system and to the introduction of the NHS.[12]

Following the UK example, the establishment of the Italian NHS avowedly aimed at assuring individuals uniform access to comprehensive care, funded by general taxation, regardless of individuals' socio-economic conditions and place of residence. As a result, there are two main pillars of the new system: (i) all citizens are entitled to receive healthcare services; and (ii) these services include a range of necessary treatments identified by the legislator. In

[10] In some cases, the insurance scheme was not even responsible for covering the actual provision of healthcare services. For an extensive and more detailed overview of the insurance schemes operating before the establishment of the Italian National Health Service system, see Morcaldo and Salvemini (1978).

[11] Lo Scalzo et al. (2009), p. 19.

[12] See, Neri (2009).

essence, the 1978 reform pursued a reduction of the disparities in the geographical delivery of medical care, as well as a restraint and a rationalization of health expenditures.

The first step towards the new healthcare system was the creation of an organizational structure broken down into three different levels of administration: national, regional, and local. Whilst, the second consisted in the introduction of a mixed financing process based on general taxes and compulsory health insurance contributions grouped in the so-called National Health Fund. The central government was responsible for outlining the national planning and managing the National Health Fund.[13] In turn, regions were in charge of the local planning in accordance with the guidelines provided by the national authority and of the allocation of the financial resources to the local level. The local administration was the level of government responsible for the actual provision of healthcare to the population. It was represented by local health authorities (LHAs), that is, vertically integrated organizations funded on a capitation basis by regions and administered by municipal governments.[14] After an initial success, which coincided in 1987 with the halving of the disparities in regional health expenditures compared to ten years before,[15] the 1978 reform revealed several limitations. In particular, a major shortcoming was that

"*virtually the entire responsibility for financing the NHS lay with the central government, which, however, had limited power over how the USLs – legally creatures of the regions and run by the municipal governments – spent these funds. The central government's response to the disconnection between funding responsibility and spending power created a situation of permanent financial crisis*".[16]

The NHS soon turned out to be characterized by jurisdictional conflicts among its different tiers. In particular, there was not a clear separation between the responsibilities of national and regional governments. Regional administrations commonly claimed that the central government was systematically and deliberately under-estimating the financial resources needed to cover their healthcare expenditures. In response, regions regularly did not comply with the budget caps imposed on them. This combined with the lack of institutional mechanisms designed to make this layer of government accountable for overspending led to a chronic situation, where regions were systematically in deficit and the central government had to intervene ex-post to finance them.[17] Due to foreseeable bailouts, regional governments

[13] In particular, with respect to the management of the National Health Fund, the state was responsible for deciding the regional allocation of the resources derived from taxation and for fixing the ceilings to impose on regional spending.

[14] Fiorentini et al. (2008), p. 206; France et a. (2005), p. 189.

[15] "*whereas in 1977 regional health expenditure varied from 36 percentage points above the national average in the Center-North and expenditure in the South fell 28 percentage points below the national average in the South, by 1987 this variation had been successfully halved.*" See, Doetter and Götze (2011), p. 3. On this point, see also Fargion (2006).

[16] France and Taroni (2005), p. 174.

[17] As observed by Francese and Romanelli (2008), another problem was the lack of coordination activity exerted at the national level. For instance, the reform also contemplated the definition of a three-year National Health plan conceived to encompass the main features of the national healthcare policy and their implementation strategies. However, despite its relevance, the government approved the first National Health plan only in 1994.

had the perverse incentive to exceed budget caps also to signal – in view of the next budget negotiation – to the central government that their financial needs were actually greater than those previously estimated. On the other hand, the state's under-financing was a strategic behavior in order to push regions to contain costs.[18]

At the beginning of the Nineties, a series of events occurred simultaneously: the national budget almost out of control, the crisis of the Italian Lira due to the currency devaluation against the German Mark, a rising unemployment rate and a series of corruption scandals of politicians, called for a major reform of the NHS, which took place at the turn of 1992 and 1993.[19] In particular, this new legislative intervention further increased the authority of regions and reconsidered the role of LHAs in the light of managerial principles. The state retained the exclusive power to decide the 'essential levels of care' (LEAs). At the same time, regional governments had the power to widen this benefit package for their residents and became accountable for the provision of these services and for repaying, with their own resources, any deficit caused by expenditures not related to LEAs.

The legislator looked again at the British experience of the creation of an internal market by recognizing the managerial independence of major hospitals and local health authorities and by making the first attempts at splitting purchasing and provision functions. In this phase, the main change consisted in an increasing delegation of power and responsibilities to regions.

The choice of entrusting local governments with the administration of LHAs was originally meant to foster citizens participation to the NHS, but it resulted in an inefficient use of public resources and, in some cases, LHAs became the mere expression of local political interests.[20] In response to this situation, LHAs were transformed into local health units (LHUs), that is, public enterprises no longer managed by local governments, but rather by a chief executive officer appointed by the regional administration. Whilst, major hospitals were removed from the control of LHUs and turned into autonomous trust.

Consequently, LHUs were significantly subtracted from the influence and political control of local interests and became the subject accountable for the provision of healthcare in their geographical area. In order to satisfy the needs of their population, these organizations could count on their own staff and facilities or could resort to independent hospitals, as well as to other providers specialized in ambulatory care. This new configuration would enhanced competition among providers, which would have to compete for contracts.[21] However, the actual degree of separation between purchase and provision was again decided by regions. This, combined with the greater autonomy granted to this level of administration by the reform, led to relevant interregional differences. Regions ended up differing in the structure and funding of medical services to the extent that different regional models started to appear in various areas of the country.[22]

[18] In this respect, Bordignon and Turati (2009) observe that "*Public health expenditure in Italy is (partly) the result of a strategic game being played by regional and central governments alike.*"

[19] Legislative Decree December 30,1992, n. 502 and Legislative Decree December 07, 1993, n. 517.

[20] See, France et al. (2005), p. 189.

[21] France et al. (2005), p. 207.

[22] Jommi et al. (2001).

Despite the major effect of increasing the presence of private providers at the regional level,[23] the implementation of the 1992/93 legislative intervention raised concerns about the different models of governance adopted by regions and the perceived fragmentation in the functioning and structure of the market. The level of separation between purchaser and provider and the subsequent competition experienced in the UK was never achieved in the Italian context. Indeed, Italy has substantially pursued the introduction of a more conscious behavior of healthcare providers for cost containment. Given the dissatisfaction with the outcomes of the 1992/93 reform, the competition-based model of governance was soon revised and softened by the last structural reform of the Italian NHS.[24]

In 1999, the organization of the NHS was further reshaped in the light of the concept of 'managed planning' (so-called '*programmazione negoziata*').[25] In order to limit the interregional inequalities emerged, the legislator decided to favor the uniformity of the NHS by promoting cooperation rather than competition between private and public providers. Specifically, the purchaser/provider split was still envisaged, but the reform foresaw the implementation of a two-stage negotiation system (region-local health authorities and local health authorities-providers). Such a system was aimed at identifying volumes of services and funding budgets to better control costs and contain the provision of unnecessary services.[26]

Anyway, this reform was never fully accomplished, because early 2000 coincided with a strengthening of the process of fiscal federalism initiated in 1997 that led to a strong regionalization of financing in the healthcare sector.[27] In particular, the legislator recognized regional financial autonomy by turning health contributions and some minor taxes into regional taxes. As a result, the main source of regional funds became a regional tax on production combined with additional transfers derived from general national taxation. All these taxes were set aside in the so-called National Equalization Fund to replace the National Health Fund.[28] A few years later, in 2001, a constitutional amendment further stressed the role of regions by recognizing their exclusive responsibilities in the organization and provision of healthcare services.[29] At the same time, the amendment stated the right of Italian residents to uniform essential levels of care that have to be free at the point of delivery and are defined by the central government.

Another important step from the financing perspective was included in Financial Law of 2006[30] through which the national government considered the necessity to support those regional governments in systematic and high deficit to also control the north-south divide. In particular, repayments plans (so-called '*Piani di rientro*') were elaborated for the regions

[23] See, Neri (2009), and Doetter and Götze (2011).

[24] Legislative Decree, June 19, 1999, n. 229.

[25] Mapelli (2012), p. 185.

[26] Mapelli (2012), p. 185. For a more detailed discussion of the two-stage negotiation system, see Fiorentini and Ugolini (2000).

[27] The process of fiscal federalism was initiated by the Legislative Decree 446/1997. As noted by Francese and Romanelli (2008), this legislative intervention was the first attempt to combine expenditure and financing responsibilities. See also, Mapelli (2012) and Atella (2011).

[28] Legislative Decree, February 18, 2000, n. 56.

[29] Constitutional Law n. 3, 18 October 2001.

[30] Law 266/2005.

with such a high deficit that could not make a credible commitment to heal their own financial situation. These plans started to be applied in 2007 and they still represent the principal tool to enforce budget constraints on the more problematic regions.[31] More recently, in May 2009,[32] regional financial autonomy was further reinforced with the precise intent to grant regions equal spending powers to those enjoyed in social policy. The major novelty introduced was the so-called 'standard cost' criterion to quantify the costs that regions had to bear in order to provide healthcare to their residents.[33] The challenge of this reform lay in the identification of the methods to determine the standard costs. In fact, the law only referred to the standard costs associated with the essential levels of performances that are "*determined by State Law in full cooperation with Regions and Local Authorities* and have to be provided "*efficiently and adequately to all Italian State territory*".[34]

Overall, all these reforms have led to a health system ruled by different layers of government whose interaction actually determines the public health policy of the country. Each level of administration has its specific role, nonetheless the separation of their tasks is not always so clear and their relationships are sometimes tense. The structure of the system today is characterized by a common framework that coexists with increasing differences among regions in terms of the organization of medical provision, health expenditures and financing.

2.2.1 Organizational Structure

The long-lasting process of reforms led to a NHS characterized by a structure broken down into three different levels of administration: national, regional and local. The central government is responsible for setting the essential levels of care corresponding to the health benefit package to which residents are entitled. In particular, these services are identified as a positive and a negative list. The positive list includes all services that must be uniformly offered in all regions classified in macro categories of care: (i) public health services; (ii) hospital care, and (iii) community care,[35] while the negative one specifies the categories of services

[31] For instance, according Fondazione Farmafactoring (2012), repayment plans have been a successful instrument of costs containment. During the period 2007-2010, the average annual growth rate of healthcare expenditure was 2.4%, whereas this rate stood at 6.6% for the period 2001-2006.

[32] Law n. 42, 5 May 2009.

[33] Before the introduction of the 'standard cost' criterion, regions' funding was determined on the basis of historical spending.

[34] Law 42/2009, art. 8, par. 1, letter b. Consequently, the determination of the standard costs cannot occur without the intervention of the central government that has first to specify the essential levels of performances. On this issue, see Scuto (2010) and Villani (2010). For an overview of the evolution of the financing methods of the Italian NHS see Reviglio (2000), Caroppo and Turati (2007) and Mappelli (2011). A further attempt to restrain public expenditures took place in 2012 when the Italian government initiated a process of spending review in response to the ongoing economic crisis. For healthcare, this meant the Legislative Decree 95/2012, which pursues a significant lowering of public expenditures through the reduction of the number of beds, the decrease of territorial pharmaceutical expenditures and the containment of both the services purchased from private providers and the expenses for medical devices. In particular, the maximum number of beds per thousand inhabitants has been set to 3.7 and this limit should have entailed 7,000 fewer beds by 2013.

[35] Torbica and Fattore (2005), p. 47.

that do not fall under public coverage.[36] Similarly to what happens for medical care services, the NHS also divides drugs into a positive list, identifying all medicines the NHS pays for, and a negative list, indicating those drugs that are fully at the expenses of patients.[37]

Responsible for the provision of LEAs are regional governments. This tier of government also has the discretionary power to deliver healthcare services not included in the positive list, but it has the subsequent obligation to finance these additional benefits with its own sources of revenues. Regions organize the delivery of these services through the local level, which is constituted by a system of public and private healthcare structures and providers. Specifically, it is possible to distinguish four types of local players: (i) local health units (LHUs);[38] (ii) independent hospitals (IHs)[39] and teaching hospitals (THs);[40] (iii) national institutes for scientific research (RHs);[41] and (iv) private accredited providers.

LHUs are public vertically integrated enterprises organized on a population-basis and "*primarily concerned with protecting and promoting public health and [are] responsible for achieving the health objectives and targets established by national and regional planning.*"[42] These organizations operate on a geographical basis and patients' enrollment to the health plans managed by them is done according to the place of residence of patients. Nevertheless, patients can freely decide whether to receive medical treatments in the LHU they are enrolled with or in another LHU. In the latter case, the LHU treating a patient is reimbursed by the LHU the patient belongs to. In this way, LHUs act as payers and suppliers of services at the same time.[43] Even though LHUs have their own legal autonomy, they depend on regions. In particular, regional governments are responsible for deciding the size and structure of LHUs; appointing and dismissing their chief executive officer; monitoring their conduct and financing them on a capitation basis and special programs.

IHs are semi-independent hospitals with the status of public enterprises that substantially resembles that of the British Trust hospitals. Legally established in 1995, these health centers are responsible for providing highly specialized tertiary hospital care. Their governance is similar to that of LHUs. Specifically, they are run by managers, who define the mission and objectives of the structure through a three-year strategic plan, that, in turn, has to be in line with regional recommendations. A sub-category of IHs is represented by the University/Teaching Hospitals (THs), which besides providing medical services also offer

[36] As well described in France et al. (2005), there are three categories of services contained in the negative list. The first group includes those services excluded due to proven clinical ineffectiveness or because they are not considered to be of primary responsibility of the NHS (e.g. plastic surgery when it does not concern malformation or injuries). The second group contains those diagnostic and ambulatory services that are covered only under specific medical conditions of patients (e.g. dental orthodontics). Finally, the third group lists different types of hospitalizations, defined in terms of diagnosis-related groups (DRGs), that are considered inappropriate and that should be replaced by other treatments such as, for instance, ambulatory care.

[37] These positive and negative lists constitute the so-called National Pharmaceutical Formulary.

[38] In Italian, Aziende Sanitarie Locali (ASL)

[39] In Italian, Aziende Ospedaliere (AO).

[40] In Italian, Aziende Ospedaliere Universitarie (AOU).

[41] In Italian, Istituti di Ricovero e Cura a Carattere Scientifico (IRCCS).

[42] European Observatory on Health Care System (2001), p. 60.

[43] See, Maio and Mazoli (2002), p. 303.

teaching and training activities and may have a commitment to research.[44]

RHs are research-oriented hospitals especially active in the field of biomedicine. They "*represent a national network where basic and translational biomedical research is undertaken in synergy with the delivery of high qualitative health care.*"[45] The status of a research hospital is granted by the Ministry of Health, which is responsible for monitoring their research activities and participates in their governance. In fact, the Ministry of Health in collaboration with the region, where the hospital is based, is tasked with the planning, financing and monitoring of these organizations. In particular, the Ministry nominates their Scientific Director[46] and gives the basic financing for scientific research, whereas regional governments fund medical care provision to patients. Individuals are entitled to receive hospital care on a free-of-charge basis and suppliers are reimbursed by the LHU to which a patient belongs through a mix of prospective payments. Whereas patients are assigned to a LHU on the grounds of their place of residence, they have full discretion in the choice of their provider of hospital services. Consequently, for hospital care treatments, individuals can seek care in a facility that is not managed by their LHU and that is not even located in their region.[47]

Finally, private accredited providers are private health organizations offering ambulatory services, hospital care and/or diagnostic services that have passed an authorization and accreditation process run by regional health departments. Regional governments are responsible for the accreditation procedures that are conceived to ensure the quality of the medical care supplied. In particular, private providers are required to possess the technological, organizational and structural prerequisites set by regions. The discretionary power of regions in deciding these prerequisites aims at recognizing regional independence and at permitting to take into due consideration local specific characteristics. Once accredited, private providers are paid by regional governments through a DRG based scheme. Some regions leave to LHUs the task of negotiating with private providers the type of services to be delivered and the due compensations (e.g. Lombardy), while others prefer to be in charge of these negotiations (e.g. Abruzzo).

Despite this common framework, the NHS shows significant interregional differences in terms of organization of the local level that are a result of the regions' autonomy. Regional governments have modified several times the structure of their local level, but the major changes were undertaken in the mid-nineties following the 1992/1993 reform. As a consequence, the number and average size of LHUs and IHs vary widely among regions and there is a high heterogeneity in the number of hospitals directly managed by LHUs and in the

[44]THs are connected to universities, whose presence is considered in the governance of the structures themselves. In fact, universities are involved in the appointment of the hospitals' manager and in the definition of both the strategic plan and internal regulation of the facilities. Regions finance the delivery of medical care by THs on a free-for-service basis.

[45]Lo Scalzo et al. (2009), p. 77.

[46]Conversely, the General Director of RH is appointed by the Board of Trustees.

[47]Fabbri e Robone (2010). The authors identify the main drivers in choosing the admitting hospital in the distance from home, hospital specialization, waiting lists and perceived quality.

presence of health structures other than LHUs and IHs.[48]

Over time, there has been a steady and generalized reduction in the number of LHUs from 659 in 1992 to 197 in 2000. In 2012, they amounted to 145 with an average population of 415,000 inhabitants.[49] A LHU directly manages on average 2.9 hospitals with an average number of beds per facility of 159. As for the number of IHs, in 2012 the NHS could count on 61 of these structures. In particular, Lombardy opted for the complete split of all hospitals from LHUs, while three regional governments (i.e. Abruzzo, Molise, Valle dAosta) and the two autonomous provinces (i.e. Trento and Bolzano) preferred not to constitute any IH. In between these two opposite strategies, there are the remaining regions with a wide spectrum of possible configurations ranging from very few IHs as in Veneto to a multitude of IHs as in Sicily. On average, an IH directly administrates 2.2 hospitals with an average number of beds per facility of 298.[50] More homogeneous is the situation with respect to the number of THs as there were 27 public THs in 2012, whereas the RHs amounted to 18 distributed among 13 regions (Table 2.2).

The existing interregional differences are not limited to the sole organizational aspect, but they involve also the type of governance exerted at the local level. In recent years and in the light of the progressive introduction of elements of fiscal federalism, regions have focused their intervention on the implementation of several institutional changes aimed at better management and a greater cost containment.[51]

These changes have also concerned the degree of control of regional governments over the bargaining strategies of their LHUs in purchasing services from private and public providers. As described by Fiorentini et al. (2008), several regions in southern and central Italy did not intervene at all and preferred to simply cover the actual spending of their providers. Differently, the majority of regions adopted the so-called 'local health authorities-centered model', whereby LHUs received regional transfers on a capitation basis and concluded agreements with accredited public and private providers. A smaller number of regions in the North and Center opted instead for the so-called 'region-centered model' according to which

[48]Ferrè and Ricci (2011), p. 29.

[49]For an overview of the changes that took place over time in the structure of the local level in each region, see Ferrè and Ricci (2011). The authors also report that the region with the biggest LHU in term of population is Marche; on the contrary, the LHUs in Veneto, Friuli Venezia Giulia, Umbria and Sardinia have an average population that does not exceed 250,000 individuals.

[50]In absolute terms, in 2012 these were 629 dependent hospitals, 10% of which was managed by IHs..

[51]In particular, more and more often regions have created supra-LHUs entities or levels of administration to centralize some specific administrative function (e.g. logistic). For example, Tuscany has constituted three supra-LHUs entities each of which is responsible for three out of the nine LHUs in the region and on their behalf manages several administrative activities such as the procurement function. Conversely, three regions (Marche, Molise and Valle d'Aosta) and the autonomous province of Trento centralized everything by unifying all their LHUs in a single regional one. More in general, Ferrè and Ricci (2011) identify four main models, whereby regions create a supra-LHUs entities or level of administration. First, regions develop an e-procurement platform and a central purchasing station whose services LHUs can optionally or mandatory access. Second, LHUs constitute one or more consortia to jointly manage specific technical-administrative activities. Third, regions establish legally independent entities that are responsible for the provision of a wide range of services (such as, for example, risk management, procurement or purchasing) to LHUs. Fourth, regions decide to unify their LHUs in a single regional one.

Table 2.2: Distribution of Italian Public Healthcare Structures by Region and Type (Year 2012)

Region	**LHUs**	**IHs**	**THs**	**RHs**
Abruzzo	4	0	0	0
Basilicata	2	1	0	1
Calabria	5	4	0	1
Campania	7	6	3	1
Emilia Romagna	11	1	4	1
Friuli Venezia Giulia	6	1	2	2
Lazio	12	3	3	3
Liguria	5	0	0	2
Lombardy	15	29	0	1
Marche	1	2	0	1
Molise	1	0	0	0
AP Bolzen	1	0	0	0
AP Trento	1	0	0	0
Piedmont	13	5	3	0
Puglia	6	0	2	2
Sardinia	8	1	2	1
Sicily	9	5	3	1
Tuscany	12	0	4	0
Umbria	4	2	0	0
Valle d'Aosta	1	0	0	0
Veneto	21	1	1	1
Total	145	61	27	18

Notes: $LHUs$=Local Health Units; IHs=Independent Hospitals; THs=Teaching Hospitals; RHs=Institutes for Scientific Research. AP=Autonomous Province. Source: Italian Ministry of Health

regions and local health enterprises played the role of purchaser and providers respectively and the independence of the latter was more limited. The only region actually implementing a 'purchaser-provider split model' was Lombardy, which called off the control of LHUs from all hospitals with the result that LHUs "*acted mainly as third-party payers in a system where public-private competition and patient freedom of choice were encouraged.*"[52]

To some extent, it is possible to claim today that the different choices made in response to the different steps of the reform process in the Italian NHS have materialized in 21 different

[52]Fiorentini et al. (2008), p. 207.

organizational and governance models[53] that represent at the same time a strength and a weakness for the national system. This heterogeneity can be beneficial because regions may meet better the specific needs and preferences of their population, but also because the solutions implemented by some regions may be taken as reference by others. On the contrary, it can be problematic, as it makes it more difficult to manage and monitor the healthcare system as a whole.

2.2.2 Medical Personnel

A striking figure characterizing the Italian case is that the country has more doctors per capita than most other OECD countries. In 2011, the ratio of practicing physicians per 1000 residents was 4.1, above both the OECD average of 3.2 and the European average of 3.4. On the contrary, the country is characterized by an under-supply of nursing personnel reporting, in 2011, a number of nurses equal to 6.3 per 1000 residents, less than the OECD average of 8.7.[54] According to the latest figures available for the year 2010, the Italian NHS employs overall 110,732 physicians and 334,918 nurses.

The provision of primary care services is entrusted to general practitioners (also called family doctors), paediatricians and on-call doctors (the so-called *Guardia Medica*) for after-hours healthcare. General practitioners and paediatricians have also a 'gatekeepers' function being responsible for referring patients to secondary and tertiary care. They work as independent professionals under contract with the NHS and are paid mainly on a capitation basis according to the number of patients enrolled in their list with an allowed maximum of 1,500 patients for general practitioners and 800 for paediatricians. To receive care, Italian residents are required to enroll with one of them. Patients are free to choose any doctors they prefer among those belonging to their LHU of residence and can decide to change physicians at any time. Besides capitated-payments, that are uniform across the country and regulated by specific national contracts, these health professionals receive also extra remunerations for (i) taking part in special programs; (ii) attaining organizational or expenditure objectives, and (iii) offering additional services (e.g. vaccinations, certifications or home-care visits). Furthermore, general practitioners and paediatricians can work in team by setting up voluntary associative practices.[55] In 2010, general practitioners amounted to 45,878 (one for every 1,143 residents), whereas pediatricians were 7,718 (one for every 1,026 children under

[53] As noted by Mapelli (2012), p.219, this heterogeneity have been favored also by the peculiarities of regions in terms of historical backgrounds, economic development, territorial dimension and local culture.

[54] According to Bertinato et al. (2011), the country suffers a structural shortage of over 70,000 nurses. This has led to a strong presence of foreign nurses in Italy, who made up between 9.4% and 11% of the nursing personnel in 2008. Differently, the country is characterized by a much lower portion of foreign doctors with estimates varying between 1% and 4%.

[55] Three are the main forms of primary care associations. First, according to 'associative practices', from 3 to 10 general practitioners may decide to adopt clinical and diagnostic guidelines and participate in workshops, while continuing to work in separate offices. Second, 'network group practice' requires the further step of having a common information system and network in order to share patients' electronic records. Third, 'group practice' brings together in a same ambulatory 3 to 8 general practitioners, who are also obliged to have a common patient electronic health record system. See, for example, Lo Scalzo et al. (2009).

14 years). As for the on-call doctors, these were 12,104 (20 for every 1000 residents) grouped in 2,925 *Guardia Medica* stations.

The vast majority of the NHS employed physicians (around 80%) operate in the hospital sector, providing inpatient services and specialist ambulatory care. These services are free or at nominal charges at the point of use and hospital doctors are paid by salary. A portion (i.e. 20%) of this salary has been transformed in a function of grade and performance by a reform in 1999.[56] All physicians hired by the NHS have the status of civil servants. However, hospital physicians are also allowed to practice privately (i.e. dual practice). Finally, specialist inpatient and outpatient services are also provided by a small number of independent physicians working under contract with the NHS and paid by fee schedules set at the regional level.[57]

2.2.3 Healthcare Expenditure and Financing

The Italian NHS is the third largest healthcare system at the European level after only Germany and France. In 2011, total expenditures stood at nearly 113 billion euros equal to 7.1% of GDP and to a 1.4% increase compared to 2010. The average per capita expenditure was 1.862 euros at the national level with large interregional variations. Calabria recorded the lowest expenditure with 1.704 euros, while Valle dAosta, Friuli Venezia Giulia, Liguria and Molise and the autonomous province of Bolzano registered an expenditure exceeding 2.000 euros.[58] Regions present also significant differences in terms of deficit experienced. In particular, in 2010, two regions (Lazio and Campania) were responsible for the 66.2% of the national deficit. The main source of health funding is represented by public funding that, in 2011, covered 77.8% of health spending, above the average of 72.2% in OECD countries.

Regions devote 70% of their budget to healthcare and are responsible for 90% of public expenditure in health services.[59] Nevertheless, the funding of the NHS is a shared task between the central government and regional administrations. National and regional resources are combined to form the budget of the NHS that represents the national financing necessary to assure the provision of the LEAs in the country. Every year, the budget obtained by both national and regional sources is then divided between the 19 regions and the 2 autonomous provinces, which in turn split the funds received among their LHUs. The financial need of each region is quantified according to a formula, whereby an average value per inhabitant is multiplied by the resident population and weighted by age-specific utilization rates of medical care. The figure obtained is then summed up with interregional patients flow measures and the resulting amount represents the resources to be allocated to each regional administration.[60]

As for the origin of funding, regional financing comes mainly from the IRAP (i.e. *Imposta*

[56] See, France et al. (2005), p. 195.

[57] Maio and Manzoli (2002), p. 304.

[58] For a comprehensive and detailed description of healthcare expenditure in Italy in 2011, see Ministry of Economy and Finance (2012). For an overview of their evolution over time, see Armeni (2011).

[59] Doetter and Götze (2011), p. 7.

[60] See, Mapelli (2012) and Lo Scalzo et al. (2009).

regionale sulle attività produttive), the regional tax on production applied on the value added of companies (corporations, partnerships and self-employed workers) and on the salaries of civil servants.[61] An additional source of regional nature is the so-called *addizionale IRPEF*, a piggyback tax imposed on top of the national personal income tax (i.e. IRPEF - *Imposta sul reddito delle persone fisiche*).[62] In 2010, these two regional taxes yielded 36,874 billion euros and reported a 6% decrease compared to the previous year leading to stricter budget constraints.[63]

Regions have also at their disposal revenues from other taxes such as the vehicles tax and have the discretion to devote additional portions of their budget resources to healthcare.[64] In turn, the state contributes to the NHS funding through a share of both the national VAT and petroleum excise tax. The precise share of these taxes to be devoted to healthcare is decided annually by the central government itself with the objective of providing adequate funds for the supply of the LEAs by all regions.[65] In 2010, the central transfers derived from the VAT and the oil tax amounted to 53,498 billion euros recording an 8.7% increase with respect to 2009.[66]

However, the final quantification of the NHS budget is the result of a negotiation between regions and the central government that takes into account also the macroeconomic situation of the country, the status of public finances and the requirements coming from the European Union.[67] Originally, the choice of setting the budget *ex-ante* was made in the belief that such a strategy would have avoided the high debts experienced with the insurance schemes system, where healthcare expenditure was known only at the end of the year. First, the mismatch between financial responsibility and spending power introduced by the 1978 reform and later the systematic tendency to underestimate the financial needs of the system and to overvalue the savings achievable through containment measures, led to the continuous creation of deficits.[68] In recent years, the central government has tried to limit these deficits by underwriting annual state-region agreements (so-called '*Pacts for Health*'). In particular, the State has progressively conditioned the access to additional resources to the conclusion of these agreements, which were meant to improve regional governance of healthcare and to discipline regions' financing and expenditure conduct.

In addition, since 2007, regions with higher deficits are subject to repayment plans, whereby, among other things, they are deprived of their autonomy in deciding the rate of both the piggyback income tax and the tax in production that is compulsorily set at the

[61]The rate imposed on the value added of companies and on the salaries of civil servants amounts to 3.9% and 8.5% respectively. Regional governments have the possibility to vary the rate by 0.92%. They can increase these rates by this percentage when they face healthcare deficits. Conversely, they can decrease them by the same percentage to attract firms' investments.

[62]The rate of this regional tax is set at 1.23% and can be increased by 0.5%. Those regions that suffer from high budget deficits have the obligation to impose a 2.03% rate.

[63]Armeni (2011), p.122.

[64]Mapelli (2012).

[65]France et al. (2005) and Fiorentini et al. (2008).

[66]Armeni (2011), p.122.

[67]Mapelli (2012).

[68]See, Mapelli (2012), Lo Scalzo (2009), and France and Taroni (2005).

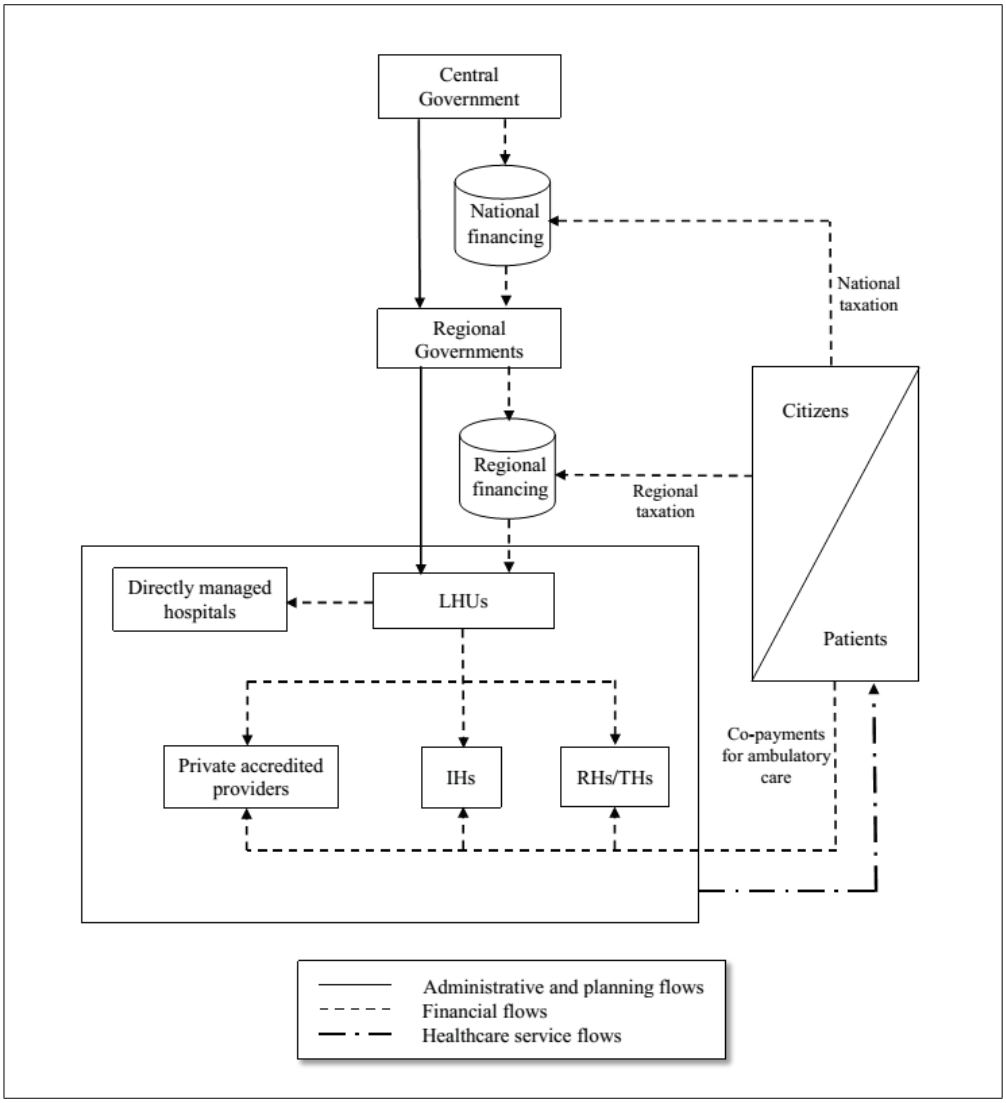
highest possible level.[69] In this way, regions are discouraged from free riding on the contributions received from patients coming from other regions, as extra financial needs must be met also through a higher fiscal effect at the local level.[70]

In the end, the picture that we obtained is that of a system under financial stress and characterized by a strong planning component, with problems of governance given by the complexity of the objectives pursued and a top-down approach. Hence, Italy offers the possibility to study the phenomenon of medical malpractice within a context that clearly differs from the one usually studied by the related literature (i.e. the U.S.). In particular, in Italy, the national public health policy translates into different regional systems that end up reflecting the typical north-south divide of the country. Moreover, the public nature of the system strongly affects the choices of both clinicians and healthcare facilities. Public hospitals cannot refrain from offering the entire set of LEAs and, as a result, their production capacity is planned by the central and regional government, while publicly employed doctors are subject to both the directions of public health authorities and of the facilities they work for. Therefore, the differences among the two systems are not limited to their objectives and sources of funding, but extend to both their organizational aspects and functioning with possible relevant consequences on the phenomenon of medical malpractice itself.

[69] Currently, there are eight regions subject to repayment plans: Abruzzo, Calabria, Campania, Lazio, Molise, Piedmont, Puglia and Sicily. Sardinia interrupted its repayment plan, while Liguria is the sole region to have successfully achieved the objectives set in its plan.

[70] Fiorentini et al. (2008), p. 210.

Figure 2.1: The Italian National Healthcare System



Notes:$LHUs$=Local Health Units; IHs=Independent Hospitals; THs=Teaching Hospitals; RHs=Institutes for Scientific Research.

2.3 Medical Malpractice Liability

In Italy, there is no specific statute law for the doctor-patient relationship, which turns out to be regulated mainly by the jurisprudence developed by the Court of Cassation.[71] In fact, the responsibility of physicians (public or private hospital employees or independent practitioners) is interpreted as a contractual liability and the duties of doctors towards patients are formally governed by principles of contract law.[72]

In particular, doctors are both civilly and criminally liable with respect to medical malpractice cases. Therefore, physicians will respond, in every case of alleged malpractice in civil courts for the damages suffered by patients, and eventually in criminal courts for negligent personal injuries or manslaughter. Specifically, a physician may be prosecuted in a criminal court when (i) it is possible to identify a serious error in her conduct due to the failure to comply with the precautionary rules laid down by laws and regulations or dictated by the common sense of prudence,[73] and (ii) there is a casual relationship between the medical error and the injuries suffered by the patient. In this case, the physician is accused of the crime of negligent personal injuries (*lesioni personali colpose*), that under Article 43 of the national penal code is described as "*an event that, even if it happened against the intention, occurred due to negligence, imprudence, unskillfulness or failure to comply with laws, regulations, orders and disciplines.*"[74]

As for the civil liability, physicians can be brought to a civil court for any illicit professional conduct when a causal link is identifiable between such a conduct and the event that causes the injuries experienced by the plaintiff. Doctors must observe reasonable diligence with respect to the characteristics of the activities performed. This means that clinicians are not obliged to assure under any circumstance a positive outcome, rather that they always have to guarantee that their conduct follows the normal standard of adequate medical preparation and meticulous attention. If a physician fails in providing this diligence, she is considered liable for negligence or imprudence without any distinction between gross or slight fault.[75] The fault is considered gross if the physician violates the minimum skills required by medical profession, whereas it is recognized as slight if a doctor harms the patient because of an omission of care or her inadequate preparation during a surgical treatment or a medical therapy. This distinction comes into play only with respect to technical situations charac-

[71] See, Zeno-Zencovich (2007).

[72] Arts. 1218, 1176, and 2236 of the Civil Code. In the last decades, the applicability of tort versus contractual law to regulate the patient-doctor relationship has been debated, because the choice between the two was not always easy when it came to medical malpractice. As observed by Miriello (2011), this decision was complicated also by the possibility to distinguish five main types of patient-physician relationship according to the type of doctors considered (private doctors, doctors employed by private provides, university doctors, doctors working for public facilities as employees or on the ground of agreements). Anyway, according to Di Marzo (2012, p. 54): "*The treatment of medical malpractice cases as one of contract (as opposed to one of tort) appears to be a policy adopted in order to provide the claimant the possibility of recovering damages even in problematic cases, such as when the nature of the situation makes it difficult (or impossible) for the claimant to prove fault and causation by the defendant.*"

[73] Cannavò et al. (2011), p. 73.

[74] Traina (2009). p. 436.

[75] Traina (2009).

terized by extreme difficulty, where a doctor is liable to civil action for gross fault in case of imprudence, negligence or unskillfulness; and for slight fault only in case of imprudence or negligence.

In particular, negligence occurs when a physician does not adopt all the necessary precautions; thus, there is an omission of care. Differently, imprudence implies an active behavior of the doctor, who performs medical treatments without all the precautions that are considered necessary by common experience. As a result, the physician deliberately ignores all the possible negative consequences and dangers that can happen with a reasonable likelihood. On the contrary, if a doctor diverges from those technical rules, which the majority of her colleagues would have observed in the same situation, she is guilty of unskillfulness. Consequently, physicians in Italy may be liable for waiving the common standard of care with respect to professional knowledge, adequate preparation and scrupulous attention. The Court of Cassation identifies this common standard of care based on the Roman concept of the *bonus pater familias*, that is, the concept of the 'good father of a family'. In medicine, this concept refers to the diligence that a prudent doctor would have adopted under the same circumstances.[76]

Injured patients can sue not only the physician, but also the hospital. In fact, a healthcare facility is recognized to be liable, when the act or omission that damaged the patient is attributable to an activity of its doctors or employees. As pointed out by Traina (2009), the Court of Cassation has interpreted both the responsibility of the healthcare structure and the doctor as contractual liability, because "*the acceptance of the patient in the hospital for admission or for a clinical control, involves the conclusion of a contract*",[77] so that it creates a 'social contact' between patient and doctor, that is characterized by a contractual nature.[78] The recognition of the contractual nature of the physician-patient relationship has an important implication also in terms of the burden of proof, which lies on the defendant.

However, in the past, the burden of proof required in medical negligence claims differed on the grounds of the nature of the specific medical activity under examination. In fact, the Court of Cassation recognized a double nature to the physician-patient relationship: doctors faced an obligation of means[79] when they performed complex and unusual medical

[76]Grossen and Guillod (1983).

[77]On this point, Scarso and Foglia (2011, p. 341) identify two possible interpretations: "*The patient admitted to a hospital or a clinic: (i) enters into a contract with the medical institution, and is treated by an internal physician who is affiliated with the medical institution; (ii) concludes a contract with a physician practicing their professional activity within a medical institution.*"

[78]Court of Cassation n. 589/1999 and n. 577/2008. The social contact occurs when a doctor accepts the case of a patient. This is considered sufficient to produce obligations for the parties involved on the legal grounds of Article 1173 of the civil code and the resulting physician-patient relationship acquires the nature of a *de facto* contractual relationship. For a general discussion of the social contact doctrine, see Faillace (2004).

[79]On the basis of an obligation of means, the obligor is obliged to undertake all possible measures and efforts to achieve the objective desired by the counterpart, but she does not have the obligation to actually achieve it. Consequently, the obligor cannot be found responsible for not achieving the required outcome if she can prove that she has applied proper diligence.

procedures and an obligation of outcome[80] with respect to routine medical procedures.[81] As a result, in routine cases, victims were required to prove that the treatment received could be classified as a routine one and that there was a causal link between this treatment and the injuries suffered. Once the plaintiff successfully met her burden of proof, in order to not be found liable, the clinician had to prove that the damages were due to an unforeseeable and unavoidable factor that was unrelated to her behavior. By contrast, in the hypothesis of a complex case, the clinician had to prove that the treatment performed could be considered as a complex one, while the victim had to provide evidence of the negligent conduct of the doctor and of the causal relation between the treatment received and the damage experienced.

This approach changed in the early 2000's when the Court of Cassation stated that this distinction between routine and complex treatments does not determine the assignment of the burden of proof between parties,[82] rather it shall "*be applied when the judge evaluates the degree of diligence required in a specific case and the extent of the corresponding fault.*"[83] Consequently, if the litigation concerns a medical treatment considered as a routine activity for the doctor, then the defendant herself has to prove that the negative result of such a treatment was not due to negligence, imprudence or unskillfulness. On the contrary, if the medical activity performed is particularly complicated or uncommon, the physician has to prove that she applied proper diligence.

Being a contract in nature, the physician-patient relationship requires the consensus of patients to receive any given medical treatment.[84] Moreover, according to Article 32 of the Italian Constitution "*no one can be compelled to undergo any certain medical treatment except as a specific provision of the law.*" Therefore, before performing any medical professional service, a doctor needs to receive the voluntary consent of patients, who have to be fully informed. The informed consent doctrine is a direct expression of the fundamental principle of the inviolability of personal liberty and reflects the patient's right to accept or refuse any treatment after having received all necessary information about the medical procedure and its possible consequences. If a physician does not fully inform a patient, she is liable for guilty omission.[85] A doctor must provide her professional assistance, even if a patient cannot express her acceptance of the treatment, only in case of emergency and in case of high psychic

[80] An obligation of outcome implies that the obligor has the duty to achieve the counterpart-desired outcome. When she fails in ensuring this objective, she is not held liable only if she proves that the failure was caused by unforeseeable and inevitable circumstances independent from her will.

[81] Court of Cassation n.4394/1985.

[82] For a detailed discussion of the changes in the assignment of the burden of proof in medical malpractice cases, see Di Marzo (2012). The author stresses that the Court of Cassation decided to abandon the use of the distinction between routine and complex medical procedures to assign the burden of proof between the parties with decision n. 10297/2004. In particular, in this decision, the Court states that "*regardless of the type of treatment or procedure, the patient who brings an action [for damages] needs to prove the existence of a contract (or a social contact) with the physician and allege the breach of duty by the physician. The burden then shifts to the physician, who is required to prove that he fulfilled the duty [in a manner] conforming to the requisite standard of diligence and that an external event, unforeseeable and unavoidable, actually caused the damage.*"

[83] Court of Cassation n. 10297/2004.

[84] Art. 1325 of the Italian civil code.

[85] Court of Cassation, n. 2335/2001.

discomfort.[86]

2.3.1 Civil Action or Criminal Prosecution?

To obtain compensation for the damages suffered, an injured patient can freely choose to opt for a civil action or present a compensation request in a criminal procedure.[87] In Italy, 4-5% of malpractice cases lead to a prosecution in a criminal court[88] and in 52% of the cases, the denounced crime concerns manslaughter.[89]

A doctor can also be obliged by a criminal court to compensate the damages caused by her conduct to the injured patient. However, to make this possible the victim has to bring the civil action in the criminal proceeding. Under Article 75 of the Italian penal code, the plaintiff can always decide to transfer the compensation request from the civil to the criminal court if the civil action has still to achieve a judgment on the merit and the prescription to bring the civil action in the criminal proceeding is not expired.[90] To be entitled to bring a civil action in the criminal procedure, the plaintiff has to be the one damaged by the conduct or omission of the physician and there has to be a casual link between the behavior of the doctor and the damages experienced by the plaintiff.

In addition, the submission of the compensation request in a criminal court is possible only if the subject of the prosecution coincides with the one of the civil action. Otherwise, the civil and criminal procedures remain separate and continue to take place in their respective courts. However, once a civil action has been brought in a criminal proceeding, it can even be transferred back to the civil court. Specifically, if the judge in the criminal court does not pronounce herself about the compensation request, the injured party has the right to move back to the civil court.[91]

The legislator sought to regulate the exercise of the civil action in criminal courts. In particular, if a plaintiff decides to transfer the compensation request back to the civil court, the civil action is suspended until the emission of the criminal sentence. Moreover, the criminal sentence affects the judgment of the civil court.[92] This transfer of the civil action back to the civil court is possible until the penal sentence is reached, and automatically results in the revocation of the damages request in front of the criminal court. On the contrary, an injured party acting in the civil court can benefit from the favorable outcome of the criminal trial, while avoiding the adverse consequences. In fact, a sentence of acquittal in the criminal court does not affect the civil action. Therefore, the civil judge may reach

[86] Cannavò et al. (2011).

[87] For a detailed description of both the civil and criminal procedure, see Jourdan et al. (2000). Recently, the Legislative Decree 28/2010 has introduced mandatory mediation procedures in the Italian legal system. As a result, starting from March 2011, if an injured party wants to file a claim against a doctor or a healthcare provider, she must first resort to mediation. Only in the case of failure of the mediation procedure, the plaintiff can initiated a trial. See, De Palo and Keller (2012) and Gulino et al. (2010).

[88] Marsh (2011) and Rasini Viganó (2011).

[89] Rasini Viganó (2011).

[90] Art. 484 of the penal code.

[91] De Luca et a. (2011).

[92] Artt. 651 and 652 of the penal code.

an opposite conclusion compared to that of a criminal court. The judge may conclude that the defendant is guilty and her conduct represents an illicit event convicting the defendant to compensate the victim.[93]

If an injured party seeks mainly or solely compensation, thus she does not pursue also the recognition of the tort suffered and the subsequent punishment of the tortfeasor, the choice between initiating a civil action and a criminal proceeding may be influenced by a number of factors such as time and costs. Specifically, the plaintiff should consider the shorter statute of limitations of criminal procedures. In fact, while the claim for civil liability is subject to the common ten years prescription foreseen for contracts, the statute of limitations with respect to a criminal prosecution is shortened to six years. A further element that should be taken into account refers to the fact that before bringing a civil action in a criminal proceeding, the plaintiff must wait for the end of the investigations of the public prosecutor in the case of negligent personal injuries or for the pretrial hearing in the case of manslaughter. As for the costs, criminal proceedings are characterized by higher expenses in terms of attorneys and consultants. However, these are not the sole differences between civil and criminal disputes. In fact, whereas the decision to file a civil action is entirely remitted to the initiative of injured parties, a criminal prosecution can be initiated by patients only under the hypotheses of negligent personal injuries.

In fact, in Italy, according to the principle of legality, a criminal indictment can usually be moved only by a public prosecutor when there are reasons to believe that a crime has been committed.[94] As a consequence, with respect to medical malpractice cases, a criminal persecution can be initiated by (i) a public prosecutor or the judicial police;[95] (ii) those subjects that, for sake of office, have the legal obligation to report the crime;[96] and (iii) the injured party in the case of negligent personal injuries. The victim can bring a penal action against a doctor within three months from the date when she has had full knowledge of the existence of the physician's penal responsibility for the injuries suffered.[97] Finally, the plaintiff should also consider whether the information and evidence collected could be sufficient to achieve a judgment. At this stage, an important contribution can be offered by forensic medical consultants and specialized physicians practicing in the same field as the defendant. On the one hand, they could be able to confirm or deny that the case under examination may constitute a case of medical malpractice, and, on the other hand, they could provide further insights in order to decide the type of legal action that should be initiated.

[93] As to the amount of damages compensated, in principle, the decisions reached by civil and criminal courts are expected to be relatively close at least when schedules of noneconomic damages are implemented. In fact, once that this policy has been adopted, it finds application with respect to both civil and criminal cases.

[94] Grembi and Garoupa (2012).

[95] Art. 330 of the penal code

[96] Artt. 331 and 334 of the penal code.

[97] De Luca et al. (2011).

2.3.2 The European Experience

European countries are characterized by very different judicial systems that adopt different approaches also with respect to medical malpractice. However, it is possible to identify some common trends, as well as to highlight important divergences.[98]

Regardless of the Common or Civil Law nature of their juridical systems, the vast majority of these countries do not have a specific regulation governing the physician-patient relationship.[99] Therefore, doctors' misconduct and the subsequent injuries caused to patients could lead to consequences under civil, criminal and administrative provisions depending on the specific conditions and the country. For instance, in Spain, administrative law comes into play when malpractice cases occur in public hospitals, while tort law is applied when a patient suffers damages in private facilities.[100] Similarly, medical liability falls under private and administrative law depending on the public or private nature of healthcare providers also in the Netherlands and in France.[101] Differently, under the Polish system, medical liability can have a contractual or a tortious nature depending on the status of the healthcare provider and on the type of healthcare services received by the patient.[102] However, a physician working for a hospital under an employment contract is protected by the Labor Code, thus she cannot be sued for the patient's harm, not even if the injury is a direct consequence of her fault. Therefore, the victim can file a claim only against the hospital employing the physician, which has the obligation to fully compensate the damage according to the Civil Code.[103] An analogue approach is adopted in the UK, which does not recognize a contractual nature to the patient-doctor relationship under the National Health System and doctors can be held liable for their alleged unlawful conduct in civil courts. On the contrary, in Germany, injured parties seeking compensation have always to choose between tort or contract law. In fact, as in Italy, the physician-patient relationship is considered a contractual relationship regardless

[98]The aim of this section is to offer an overview of the European juridical systems in the field of medical liability without a quality evaluation of the different systems themselves.

[99]A rare exception to this situation is represented by Lithuania, where there is an *ad hoc* regulation for medical liability. See, for instance, Ducinskiene et al.(2006) and Frati and Gulino (2013).

[100]See, Castellano Arroyo and De Àngel Yàgüez (2013).

[101]Serra and Carrara (2005).

[102]In particular, contractual liability may rise only with respect to a private physician operating in her office or in a private health facility and in any case outside the national health insurance scheme. However, in such a case, an injured party can decide to seek compensation on grounds of tort law, rather than contractual provisions. This is possible, because the doctor has breached the general duty of care which she is obliged to respect regardless of the type of relationship with the patient. In practice, injured parties usually opt for the tort regime due to more favorable conditions such as a more convenient statue of limitations and the possibility to be compensated for pain and suffering. See, Baczyk-Rozwadowska (2011).

[103]In turn, the hospital has the right of recourse to the physician. However, the hospital can seek a full recourse only when (i) the doctor intentionally caused the harm; (ii) the doctor performed the alleged unlawful practice outside the course of the treatment; and (iii) the hospital does not have a proper coverage or is insolvent. In all other cases, the recourse is limited to a maximum equal to three times the monthly salary of the employed doctor. See, Baczyk-Rozwadowska (2011), p. 1225. In practice, healthcare institutions rarely resort to recourse actions. In addition, a healthcare facility may be found liable also due to the so-called organizational-fault, so that the facility is responsible for the injuries caused by the improper organization or functioning of the structure itself.

of the private or public nature of the healthcare provider.[104]

Despite these differences, all European countries generally recognize fault as a crucial principle in the assessment of medical responsibility. Generally, the behavior of doctors subject to potential liability consists in an act or in an omission, but in both cases the fault of the physician is the necessary condition for finding the doctor liable. Therefore, patients' claims usually require the fault of the doctor either in tort, in contract or under administrative provisions. The result is that the existence of the liability of physicians depends on two main elements: (i) the standard of care adopted and the consequent concept of fault, and (ii) the burden of proof and the related investigation of the causation between doctors' misconduct and patients' damages.

The fault of doctors is assessed by investigating their behavior while performing a specific treatment and by verifying whether, in doing so, they complied with the required standard of care. Specifically, health professionals must generally act with the skill and care of the average physician operating in their field of specialization. This is precisely the standard of care adopted in Italy, where it is known as the *bonus pater familias* criterion, but it is also applied, for instance, in France,[105] Spain[106] and Germany.[107] Still, a higher degree of care is sometimes required as in the Scandinavian countries (i.e. Sweden, Finland, Denmark and Norway) and Poland. In particular, Scandinavian countries follow the experienced specialist standard.[108] As a consequence, the damages experienced by a patient shall be compensated if, in the given situation, an experienced specialist, meant as the best physician in the reference field, would have adopted a different conduct averting the injury.[109] The Polish standard of care is as strict as the Scandinavian one and coincides with the highest due diligence that a professional can apply given the current medical knowledge and taking into account the medical specialization in question. The U.K. has opted for a sort of intermediate solution. Specifically, to be considered liable, doctors must have adopted a level of care below the

[104]Similarly to the Italian context, the patient-doctor relationship is treated as a service contract, which does not entail the obligation to achieve a specific outcome, rather the duty of a careful conduct. In addition, patients do not simply enter into a contract with the physician, but also with the hospital employing the physician.

[105]In France, to prove the negligence of the defendant, the plaintiff has to demonstrate that the doctor adopted a level of care below that of reasonable diligence. Strict liability still finds application in the French context, but only in relation to damages caused by health products and nosocomial infections. For a discussion of these cases, see G'Sell-Macrez (2011).

[106]In Spain, doctors are required to meet the standard of care under the *lex artis ad hoc* rule. According to this criterion, the standard of care expected from physicians for healthcare treatments (*lex artis*) shall be assessed taking into account a skilled medical professional, but at the same time, the peculiarities of the specific case (*ad hoc*). See Delgado and Pèrez Garcìa (2005).

[107]In particular, the German system requires the exercise of reasonable care under both contract and tort law. Reasonable care that coincides with the diligence of "*a respectable and conscientious medical professional of average expertise in the relevant field*" (Bundesgerichtshof, June 13, 1960, Neue Juristische Wochenschrift 600, 1961). This also implies that if a physician performs a task for which she does not have sufficient skills or competence, she will usually be held responsible.

[108]There is only one exception: the Norwegian system does not apply the experienced specialist standard, but rather it foresees strict liability for damages derived by medical treatments.

[109]This does not mean that the patient is also entitled to the optimal treatment in absolute term, therefore the facilities and resources available in the specific case under examination must be taken into account.

standard of the reasonably skilled and experienced physician. However, when a breach of professional duty can be potentially identified, this standard of care is translated into the *Bolam test* or the standard of comparable practice. According to this interpretation of the standard of care, the alleged negligent conduct of the defendant is contrasted with that of a body of medical professionals.[110] Anyway, it is clear that the stricter the standard of care applied, the more exposed are clinicians to medical malpractice, and to the likelihood of being sued. The decision to adopt the concept of fault entails an important trade-off between the desired degree of patients' protection and the necessity to avoid clinicians ending up facing an excessive professional risk. However, to fully appreciate the actual 'weighs' assigned to each of these objectives by the different medical liability systems it is necessary also to look at the definition of the burden of proof and at the concept of causation between personal injuries and doctors' breach of the duty of care.

Among the different European systems, there is a general consensus that a crucial element for medical liability and a prerequisite for compensation is the causal link between the injury experienced by a patient and the behavior of the physician, but the specific methods to determine the existence of causation differ to some degree among countries.[111] The English 'but for' test, according to which a patient's injuries would not have been experienced *but for* the physician's breach of duty, is similar to rules adopted in many others Civil Law countries such as Germany[112] and France.[113] In all these cases, the main purpose is to find a sufficiently stringent link between the conduct of clinicians and the injuries of victims. In the Scandinavian countries, the requirement of causation is more difficult to define and there seems not to be an agreed and clear test or procedure for its assessment.[114] We can speak about a general approach consisting in a two-stage process. The first phase coincides with the *factual-causation inquiry* aimed at assessing if plaintiff's damages have been actually caused by the conduct of the defendant. The second phase consists in the '*adequate-causation inquiry*' to determine if doctor's behavior is an adequate cause of patient's injuries. The basic idea of this second step is not to include in the scope of liability conducts whose consequences can be considered too unforeseeable or remote.[115]

As for the burden of proof, civil trials traditionally require the plaintiff to demonstrate

[110]A later case, known as the Bolitho case, allows courts to accept that negligence has been proved even though medical experts suggest otherwise. See, Bryden and Storey (2011), p. 125). Precisely, in the Bolitho case, the judge argues that "*It is not enough for a defendant to call a number of doctors to say that what he had done or not done was in accord with accepted clinical practice. It is necessary for the judge to consider that evidence and [to] decide whether that clinical practice puts that patient unnecessarily at risk.*" Nevertheless, *Bolitho* is not universally adopted.

[111]Magnus and Micklitz (2004).

[112]The German approach is that of the '*condicio sine qua non*' formula under which a physician is liable only if her fault cannot be 'eliminated in thought' without eliminating also the injuries of the victim (Stauch 2011, p. 86). As in the 'but for' test the crucial point is to assess if doctor's behavior is a necessary condition for the damages suffered by a patient.

[113]In France, there is not the application of a unique principle. However, courts generally follow the 'but for' condition. See G'Sell-Macrez (2011).

[114]For a discussion of the different approaches and ways to assess the causation link, see Ulfbek et al. (2011).

[115]For a discussion of factual causation in the Scandinavian legal systems, see Schultz (2001).

the fault of the defendant, the existence of damage and the causal link between the damage and the defendant's misbehavior. However, with respect to medical malpractice, an overview of the European experience reveals that these strict requirements are often relaxed in the attempt to balance the different positions enjoyed by patients and doctors.[116] Specifically, a common tendency is the ascertainment of the causal link based on the balance of probability. This means that a probability greater than 50% is sufficient to demonstrate the existence of the causal relationship during a civil proceeding.[117] For instance, this has been translated in the French context by implementing the concept of adequate causation. According to this approach, courts should aim at assessing whether the doctor's conduct 'in the normal run of things' contributed in a particular way to harm a patient. Even the 'but for' test is sometimes modified to facilitate the causation assessment for victims. In particular, the UK system foresees the use of the principle of '*res ipsa loquitur*' (i.e. 'the thing speaks for itself') when a phenomenon cannot be explained by any other reasonable reason. Therefore, according to this principle, it is possible to infer the causal link from the very nature of the accident, even if there is no direct evidence as to the behavior of the defendant.[118] In this specific case, the idea is to alleviate the burden placed on patients and represented by the task of proving all necessary elements of liability according to the 'but for test'. Another example is provided by Poland, where under contractual provisions, there is the statutory presumption of the defendant's fault. Conversely, tort provisions do not foresee such a presumption, but they allow the plaintiff to comply with the burden of proof exploiting indirect evidence (i.e. factual presumption). Consequently, courts may assess fault if there is no evidence proving the contrary.

A final aspect to be analyzed is the award of damages as European countries adopt different approaches also in this respect. In fact, even though injured parties are always entitled to be fully compensated for all damages suffered (i.e. for all the titles of damages associated with personal injuries)[119], it is possible to identify two different compensation models in Europe:

"*(1) those systems anchored to a classic model of fault verification (with a burden of proof that seems to be always heavier for the physician) and (2) those systems that may be inspired by the spreading concept of enterprise risk in the health field and that use models established*

[116]Frati and Gulino (2013).

[117]On the contrary, penal proceedings still require a degree of certainty close to 100% in proving the causal link, according to the 'beyond any reasonable doubt' criterion. Frati and Gulino (2013) argue that, on the basis of this difference, it is possible to "*generally assume that the injured subjects are willing to choose the civil course rather than the penal one, with regard to complex and important cases as well.*"

[118]In addition, the UK system also accepts the concept of cumulative causation, which comes into play when a multiplicity of factors together led to the harm of the patient. In particular, it states that since the doctor's breach of duty as one of these factors contributed to the final damage, the doctor himself can be considered liable (Bonnington Castings v. Wardlaw, 1956, A.C. 613). In addition, the plaintiff can also be entitled to compensation, if she can prove that the alleged negligence conduct of the defendant concurred to the risk of damage (McGhee v. National Coal Board, [1972] 3 All E.R. 1008, 1011, [1973] 1 W.L.R. 1.). However, when any one of a distinct number of elements could have determined the damage suffered by the claimant, then it cannot be argued that the negligence of the defendant contributed to the risk of damage.

[119]The concept of personal injuries and the different titles of damages foreseen in case of personal injuries are discussed in the following chapter.

on the idea of damage avoidability, with less focus on the fault concept."[120]

The majority of the European juridical systems, including Italy, applies the first compensation model (so-called Fault-based system) while examples of the second model (so called No-Fault system) are France and the Scandinavian countries.[121] In practice, the actual difference between these systems is much less clear, since France and the Scandinavian countries cannot be considered pure No-Fault systems.[122]

Specifically, in France, the Patient Right Act of March 4, 2002, created the National Fund for Compensation of Medical Accidents, the so-called ONIAM ('*Office National d'Indemnisation des Accidents Midicaux*'), which is responsible for compensating damages occurred in lack of fault on the basis of the principle of national solidarity.[123] In order to be able to apply to the ONIAM, two additional conditions need to be met. On the one hand, the injury has to be caused during a treatment, diagnosis or activity of prevention and it has to be disproportionate with respect to patients' previous health conditions and their likely evolution. On the other hand, the injury has to be serious, meaning in practice that it has to imply a disability rate greater than 25%.[124] Compensation based on national solidarity may be claimed also when doctors have no insurance (e.g. insurance policy is expired, or insurance limits are met) or the offer made by the insurance company is not sufficient, as well as when the patient cannot be fully compensated through liability.[125] The ONIAM experience in France is the only true no-fault model existing in Europe.

In fact, the Scandinavian model is actually a hybrid system in which tort law provisions are alternative to compensation schemes (or patient insurance schemes).[126] Hence, in all Scandinavian countries with the exception of Denmark,[127] patients can decide to claim compensation under tort law, the patient insurance scheme or even under their own private insurance. The idea behind these compensation mechanisms is that individuals should always receive a compensation for the personal injuries suffered and these awards "*should be covered by insurance paid for by the party responsible for activities that were thought to be particularly risky (and thus not paid (directly) by the taxpayer).*"[128] In practice, under these compensation schemes, hospitals are obliged to be insured against third party liability under the Patient Insurance Act,[129] which rules when and how an injured patient is entitled to be compensated for the harm suffered in a medical malpractice case. Specifically, although the

[120]Frati and Gulino (2013), p. 88.

[121]For a discussion and comparison of these compensations model, see Douglas (2009).

[122]France can be considered a true No-Fault system only in relation to injuries covered by the national solidarity fund.

[123]See, Baccino (2013).

[124]In case of a temporary injury, in addition to the 25% disability rate, the health impairment also needs to last 6 months over a one year period. For an overview of the specific types of injuries that can lead to a claim in front of the ONIAM, see Helleringer (2011).

[125]G'Sell-Macrez (2011), p-. 1096.

[126]Ulfbek et al. (2011).

[127]The Danish legal system precludes the possibility of a civil action if a patient has the right to be compensated under the national Patient Injuries Act.

[128]Ulfbek et al. (2011), p. 112.

[129]Sweden was the first Nordic country to adopt a patient injuries act in 1975 and the relative compensation scheme.

assessment of fault is not required, injured parties still need to ascertain that the injury was caused by the doctor on the balance of probability and that an experienced specialist would have avoided the injury itself. On the contrary, if a victim resorts to a civil proceeding, she is responsible for proving the existence of a damage, the causation between the doctors' misconduct and the injury, as well as the fault of the physicians. Consequently, given the less favorable position enjoyed in a legal dispute by injured parties, very few compensation requests end up in front of a court.[130]

Interestingly, alternative mechanisms of resolution of claims are gaining prominence also in Fault-based systems. In this respect, the experience of Germany, France and England is particularly significant.[131] Specifically, in Germany injured parties can resort to medical arbitration boards. At present, there are 12 boards operating in the country. They offer to patients a free of charge proceeding in which a panel between three-to-five experts produces a report to assess if the doctor adopted a faulty conduct causing the patient's injuries. The board's decision has no binding effects on the parties involved and the choice itself to resort to this mechanism is voluntary, thus patients maintain their right to initiate a legal action. In France, besides filing a claim, plaintiffs have the possibility to apply to conciliation commissions, which are regional organizations established in 2002 and alternative to courts.[132] They act as conciliators helping the victim and the doctor or the doctor's insurer to reach an agreement.[133] Mediation plays a key role also in England, where, according to Essinger (2008), 96% of damages claims are resolved outside courts. In practice, the English system foresees a specific authority for the management of public malpractice cases, which is the National Health Service Litigation Authority (NHSLA). This body aims precisely at facilitating the dialogue between patients and health institutions in order to favor the conclusion of an agreement and the award of damages compensation.[134]

This brief overview of the different systems of medical liability in Europe reveals strong similarities among the vast majority of countries at least with respect to the fundamental elements. Due to the absence of specific legislation governing the relation between doctors and their patients, the misbehavior of clinicians may be ruled by civil, criminal and administrative provisions depending on the country. Nonetheless, the following common features have emerged: (i) fault as a necessary condition for finding a doctor liable, (ii) the necessity of causation between the injury and the conduct of physicians, (iii) the placing of the burden of proof on patients, (iv) the alleviation, to some extent, of such a burden to facilitate patients'

[130] According to Frati and Gulino (2013), "*the percentage of the extra-judicial claims settled in the Scandinavian countries amounts to 99% (Swedish Patient Insurance Association).*"

[131] An additional example can be provided by Austria and its conciliation bodies, see Koch (2011).

[132] Each commission consists of 20 individuals representing patients, medical professionals, hospital practitioners, ONIAM, insurance companies and hospitals with a magistrate as chairman. They accept claims related to medical incidents which occurred after September 4, 2001. If the incidents is of some importance, then it has to have occurred after December 5, 2001.

[133] At present, around 60% of claims are settled in a conciliation commission. However, the number of court proceedings did not decrease since commissions' decisions are usually contested in courts. In addition, courts end up sanctioning the defendant in 66% of the cases, while conciliation commissions find the defendant liable in 33% of the time.

[134] For a more detailed description of the English system, see Vanezis (2013).

recoveries. On the side of the compensation system, Fault-based systems are more commonly adopted than No-Fault systems. Yet, in the great majority of the European countries, the proof of physicians' fault becomes essential also for victims to be entitled to compensation.

In line with the European experience, Italy has a fault-based negligence system, which applies the concept of the *bonus pater familias* as the standard of care. However, in the case of Italy, the lack of a specific statute law for medical liability has led to the interpretation of the patient-doctor relationship as a contractual liability. So that, when physicians agree – even tacitly – to treat a patient, the parties conclude a contract and the burden of proof falls upon the defendant. In addition, the act of an employed physician is identified with that of the healthcare facility, she works for. Hence, besides clinicians, hospitals themselves can be held liable as well.

2.4 Medical Malpractice Crisis

Italy has been experiencing a medical malpractice crisis for several years now. Back in 2002, according to a CINEAS report, it was estimated that 320,000 out of 8 million of annual patients of Italian healthcare facilities would have suffered damages because of treatments and diagnosis received during hospitalization. These injuries would have been fatal for a number of patients ranging between 14,000 and 50,000.[135]

Recent figures released by the Italian Association of Insurance Companies (ANIA) estimate the national medical liability insurance business at 500 million euros in 2010, 58% represented by institutional policies and 42% by individual policies. In addition, they show a 252% increase in the total number of malpractice claims that rose from 9,567 in 1994 to 33,682 in 2010 (Figure 2.2).[136] This further figure coincides with an annual average increase in the number of claims higher than 12%.

A similar increase, equal to 236%, has also been recorded with respect to the claims filed against hospitals for the same period, which implies an yearly average increase in the number of claims equal to 10%. In more recent years, after a 21% jump in 2009, the number of malpractice suits involving a healthcare organization has remained substantially stable in 2010 standing at 21,353.

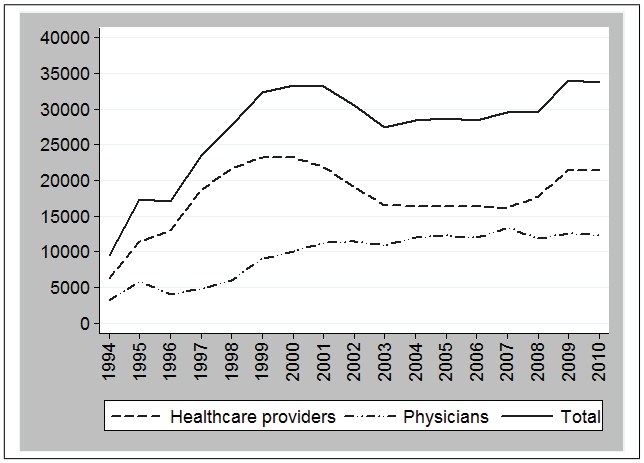
In general, the specialties recording the higher numbers of malpractice claims are orthopedics, emergency room, general surgery, obstetrics and ophthalmology. In more than 50% of the cases, patients file the claim in the same year, in which the incident occurred, and 90% of all claims are filed within five years.[137] As for the main types of medical accidents

[135]Consorzio universitario per l'ingegneria nelle assicurazioni (CINEAS) (2002).

[136]Associazione Nazionale fra le Imprese Assicuratrici (2011). The statistics provided by ANIA do not include the premiums of European insurers operating in the Italian market. This study is based on a sample of companies that accounted for 32% of the premium income of the entire general third-party liability business in 2010.

[137]Perna et al. (2010). The authors use a dataset containing all claims filed against the healthcare facilities located in Lombardy and Piedmont. The information about the Lombard medical institutions regard the period 1999-2009, while for Piedmont the observation period is 2005-2007. Even if the database does not cover the entire country, the findings are in line with the few available information at the national level.

Figure 2.2: Number of Claims Filed (1994-2010)



Notes: *Healthcare providers*= All public healthcare providers operating in Italy (i.e. Local Health Units, Independent Hospitals, Research Hospitals and Teaching Hospitals).

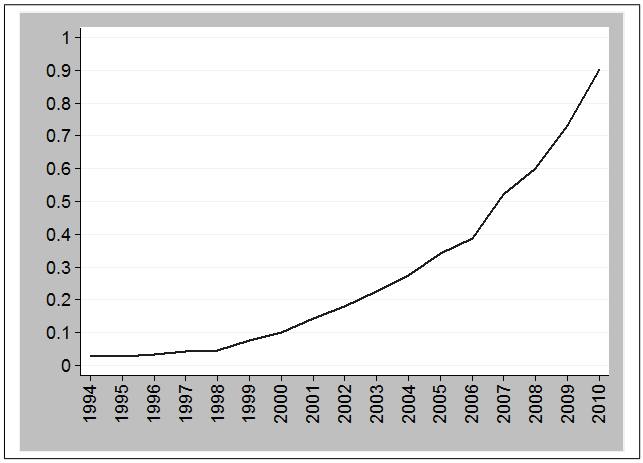
reported, the most frequent one is surgical errors followed by therapeutic errors, diagnostics errors and infections.[138]

The average cost of the malpractice suits filed in 2010 was 27,689 euros. However, ANIA stresses the tendency of insurers to underestimate the cost of claims due to the complexity of the assessment of physical impairments and the lack of adequate information immediately after the occurrence of the event. Over time, the information provided by the settled claims allow insurers to better estimate the average cost of claims of the same generation as those closed. Consequently, the average cost of the claims registered in a same year tends to have an up-ward trend over time. "*For claims filed in 1994, for example, after eight years, in 2002, insurers estimated the average cost at Euro 16,400, but two years later, after ten years, the estimate had doubled to what now appears to be the 'final' average cost of claims of that generation (about Euro 28,000).*"[139]

ANIA also provides some interesting data on the annual ratio between the number of closed claims and that of the still pending compensation requests: only 3% of the legal disputes involving public facilities were still waiting for the final decision in 1994, while this figure increases to 90.2% in 2010 (Figure 2.3).

[138]Marsh (2013).
[139]ANIA (2012), p. 131.

Figure 2.3: Annual Ratio Between Closed and Still Pending Claims (1994-2010)



2.4.1 Medical Malpractice Insurance

Over time, Italian public healthcare providers have increasingly complained about the difficulties in getting appropriate coverage.[140] Although malpractice insurance is not compulsory for healthcare facilities themselves,[141] they are contractually obliged to cover their medical staff against third-party liability.[142] Specifically, medical malpractice insurance policies cover the healthcare provider's medical personnel for damages experienced by patients while receiving professional healthcare treatments in the medical care institution or one of its facilities.[143]

In Italy, the liability risk is transferred on the insurance market where private companies (national and international) offer coverage to medical institutions with an annual premium that is computed as an adjustable percentage of the annual gross payroll of the public entity.[144] Insurance premiums are generally calculated regardless of any statistics referring to other activities of the public entity such as, for instance, the average duration of hospital-

[140]According to CINEAS (2002), a medical insurance policy for a hospital in a city of 50,000 people would stand around 750,000, up to 1-2 million for larger facilities.

[141]Liability insurance became mandatory for physicians only in 2012. The Decree Law 1/2012, converted into Law 27/2012, has imposed on all professionals (including physicians) the obligation to insure themselves by August 13 2012.

[142]See Art. 28, Presidential Decree 761/1979, December 20.

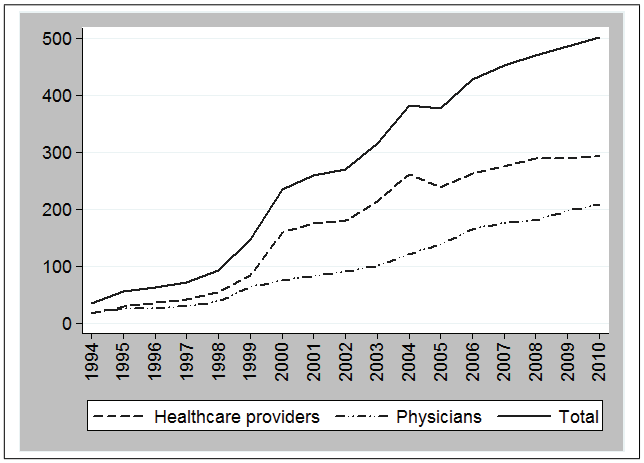
[143]Medical professional liability insurance may also cover the legal expenses bore by the physicians and/or the healthcare institution who are subject to a lawsuit. In addition, this type of insurance may foresee protection against the events affecting the safety and health of employers. Finally, it may also cover the damages suffered by patients that are caused by events not directly connected with medical activities (e.g. falls).

[144]Amaral Garcia and Grembi (2012), p. 7. For an overview on how private insurers assess insurance premiums, especially during public procurement procedures, see Perna et al. (2010).

ization or the number of beds. In addition, the assessment of premiums are shown to be substantially independent from experience rating.

In 2010, the premiums paid by healthcare facilities rose by 1.5% compared to the previous year. The rise in malpractice insurance rates is a constant phenomenon of the last decades, that does not show any sign of abating (Figure 2.4). So that, the cost sustained by healthcare institutions for professional liability reported an average annual growth of 6.2% over the eleven-year period 2000-2010.[145] A more recent study promoted by the Italian Parliament shows similar results. Specifically, between 2006 and 2011, insurance premiums increased by 23% equal to a 4.6% annual growth, while the average annual premium paid by healthcare providers nationwide rose by 35% from 2 million euro in 2006 to 2.7 million euro in 2011.[146]

Figure 2.4: Medical Malpractice Aggregate Insurance Premiums (1994-2010)



Notes: *Healthcare providers*= All public healthcare providers operating in Italy (i.e. Local Health Units, Independent Hospitals, Research Hospitals and Teaching Hospitals. On the vertical axis: millions of euro.

This study also points out that the rise in premiums is increasingly associated with the withdrawal of insurers from the market. Several insurance companies preferred to abandon the medical professional liability business. Specifically, according to the completed questionnaires received by the Italian Parliament, the malpractice insurance market in Italy has become quite restricted with only 12 insurance companies operating in it.[147] In addition,

[145]Over the same eleven-year period, the premiums paid by individual practitioners registered an average yearly increase equal to 10.5%. As a result, without distinguishing between healthcare institutions and individual physicians, the annual growth of the overall premiums in the malpractice insurance line amounted to 7.8%. See, ANIA (2012).

[146]Camera dei Deputati (2012). The study is based on a questionnaire survey carried out nationwide that could count on the responses of 169 medical institutions. In particular, none of the healthcare facilities located in Veneto, Sardinia and in the autonomous province of Bolzano provided an answer to the questionnaire.

[147]In particular, these insurance companies are: AM Trust Europe, XL Insurance, QBE Insurance, City

46% of the interviewed healthcare facilities had acquired their reference coverage from the same company in 2011-2012. If we look at the reason for the non-renewal of an insurance policy, in 9% of the cases the cause is the insurer's exit from the market, while for 48% of the cases the insurance company complained about the negative trend of the policy itself. Another interesting fact that emerges from this study is that often the explanation behind the ending of a business relationship between a hospital and an insurer is the bankruptcy of the latter (i.e. 29.6% of the reported cases).

As a matter of fact, for the Italian healthcare system, medical malpractice and medical liability insurance represent a problematic issue. In fact being public facilities, hospitals may have lower incentives to adequately monitor medical errors than private entities. Furthermore, they are not allowed to freely go into the insurance market in order to find the most convenient coverage. As with every other public entity, they are obliged to resort to public procurement in order to conclude contracts for the provision of goods, services and works. Therefore, they have to open a call for bids, in which private companies may decide not to take part and that limits their bargaining power in the light of transparency and fairness principles.

Buzzacchi and Gracis (2008) provide an overview of insurance coverage for public healthcare providers from 2003 to 2006 stressing the difficulties encountered by healthcare providers in finding this type of coverage: only 55 out the 308 analyzed calls for tenders resulted in an adjudication.[148] At the same time, the general problem of obtaining coverage is accompanied by a modification of the features of these insurance policies that reduce insurers' risk-taking. Over time, insurance companies have tended to change contract clauses reducing the risks they bear, while policyholders turn out to be insured only partially or in an incomplete way.[149] In particular, there has been a clear transition from occurrence-based policies to claims-made ones.[150] This has implied a progressive shift of risks from private insurance companies to healthcare providers that has negatively affected the risk exposure medical institutions have to cope with.

The risk exposure of healthcare providers has also been increased by the growing common practice of including excesses in insurance contracts.[151] For instance, according to Perna et al. (2010), nowadays more than one third of all medical malpractice insurance policies subscribed to by Italian facilities foresees excesses. Similar findings have been obtained by the

Insurance, Lloyd's of London, Generali Assicurazioni, Cattolica Assicurazioni, Carige Assicurazioni, INA Assitalia, Fondiaria SAI, HDI Gerling, and Faro Assicurazioni.

[148]In 40 cases, there was no adjudication; in 13 cases, the public entity opened a new call for tenders in a year, while the outcome of the remaining 200 calls is unknown as there is no available information.

[149]Perna et al. (2010), p. 155.

[150]In particular, under claims-made policies the moment in time when the event took place does not matter, but it becomes crucial for the insured to strictly follow the reporting procedures foreseen in the insurance contract. Failure to comply with these procedures can constitute grounds for the insurance company to deny coverage. In addition, after the expiration of the coverage period, this type of policy leaves the policyholder unprotected if the insured does not underwrite a new insurance. See, Tahouni and Kahn (2009).

[151]An excess corresponds to the fixed part of a damage for which a policyholder remains responsible. It can be expressed as a fixed amount of money or as a percentage on the total value of the damage to be compensated. It can also be specified in per incident terms and/or in yearly aggregated terms.

Ministry of Health in its study of 2006 on the insurance conditions of malpractice coverage. According to this report, 65% of insured health providers have underwritten policies that include excesses.[152] Perna et al. (2010) also provide the example of the Lombard medical institutions, whose total value of yearly aggregated excesses stands at almost 49 billion euros for the period 1999-2009. Initially, the inclusion of excesses in the policies had two objectives: the containment of insurance costs and making the medical institutions more responsible. However, over time, it has become a necessary condition for the conclusion of an insurance contract and a way for insurers to contain their risk exposure at the expenses of policyholders.

In order to help their healthcare bodies to cope with the distresses of the malpractice insurance market, some regional governments intervened, introducing self-insurance. Back in 2004, Piedmont decided to implement, for the first time in the country, a form of self-insurance at the regional level for all damages ranging between 1,500 and 500,000 euros, while acquiring a private coverage only for the compensations exceeding 500,000 euros.[153] In practice, the regional government established a special fund for the management of malpractice risk, which initially amounted to 45 million euros for the period 2005-2007. After one year from its introduction, this policy of self-insurance led to a savings of 9 million euros at the regional level and only 60% of the fund had actually been spent. This positive result was substantially confirmed in the following years to the extent that the region still resorts to self-insurance. Later, the example of Piedmont was followed by Friuli Venezia Giulia in 2006 and Veneto in 2009.[154] More recently, in 2010, both Basilicata and Toscana decided to rely completely on self-insurance, whereas Emilia Romagna opted for the adoption of this insurance mechanism for six of its healthcare providers (i.e. the TH Sant'Orsola, the IH of Reggio Emilia and the LHUs of Cesena, Forlì, Ravenna, Rimini) starting from January 1, 2013.[155] On the one hand, this solution has the undoubted advantage for insurance companies of avoiding dealing with the numerous micro-claims received by the medical institutions of a region. On the other hand, it entails for the region itself the relevant problem of setting aside a portion of its budget as self-insurance. Hence, self-insurance has the benefit of containing the costs, but at the same time it constitutes a challenge for both regional governments and their medical institutions that need to improve their ability to monitor claims and medical errors and to manage malpractice risk and insurance.

[152] Ministry of Health (2006), p. 20.

[153] Regional Law 9/2004.

[154] Regional Law 12/2009. Despite the regional Law is dated 2009, the actual implementation of this self-insurance strategy in Veneto started in January 2013, because the guidelines for claims extra-judicial settlement were released only in late 2011. Even though there is no official data, the region expects an annual saving of 40 million euros.

[155] In particular, these 6 healthcare providers of Emilia Romagna are totaly self-insured with respect to claims up to 100,000 euros, which constitute the 90% of the overall 1,500 yearly malpractice cases. A mixed coverage applies to claims between 100,000 and 1,5 million euros, while those exceeding 1,5 million euros are covered by a regional policy stipulated with a private insurer. The regional government has justified its decision complaining a sharp increase of malpractice premiums especially between 2006 and 2011 to the extent that, during those 5 years, insurance companies received 259 million euros while the compensations paid to victims amounted to 40 million euros.

2.4.2 Defensive Medicine

Coming under an increasing malpractice pressure and a decreasing capacity for finding protection against malpractice claims, physicians seem to have adopted a more defensive position. On the one hand, they have constituted associations aimed at reducing the tendency to file frivolous claims.[156] On the other hand, they have turned to defensive practices as a safeguard against possible malpractice liability.

In particular, two comprehensive nationwide surveys of physicians were conducted in Italy between 2008 and 2010, while a third in 2011 focused only on emergency care. The most recent one has been administered by the Association of surgeons and dentists in Rome and covered all the specialties with the sole exception of dentistry.[157] This survey interviewed 2,783 physicians actively practicing between 2009 and 2010 in the private or public sector[158] showing that 78.2% of physicians believe that nowadays the risk of becoming the target of a lawsuit is greater than in the past. 68.9% of doctors judge that there is a 30% chance to be involved in a malpractice claim. As a result, 65.4% are influenced in their daily clinical practice by the malpractice pressure perceived.

Specifically, the majority of physicians resort to defensive practices due to the pressure exerted by public opinion (65.8%) or the litigation past experience of colleagues (48.4%). Doctors are also concerned about the possible negative consequences for their career (27.8%) or the possibility of reputational damages caused by the media (17.8%). Defensive medicine is also used to avoid the possible sanctions imposed by healthcare structures or medical associations (43.1%). In particular, 53% of respondents admitted to prescribing additional unnecessary drugs that, on average, correspond approximately to 13% of the total medicines prescribed per physician. The figure increases to 73% if we consider specialized practitioners and, on average, the medicines prescribed per physician with defensive purposes are equal to 21% of the total prescribed drugs.

Similar results are recorded with respect to the use of laboratory tests. 71% of doctors use them as a defense against future potential claims with the result that on average 21% of the tests required by each doctor are simply an expression of defensive medicine.[159] As a consequence, 10.5% of the total expenditure borne by the Italian national healthcare system would be generated by medical defensive practices and this percentage can be further broken down between drugs prescription (1.9%), medical visits (1.7%), laboratory tests (0.7%), other tests (0.8%) and hospitalization (4.6%). In this regard, the study has calculated that the costs of defensive medicine exceed 10 billion euros, which is a little less than the total investment

[156]In particular, two associations have been created in Italy: (i) the association of the physicians wrongly accused of malpractice (Associazione per i medici accusati di malpractice ingiustamente AMAMI), and (ii) the association for the protection of doctors wrongly accused (Associazione ricerca italiana tutela medici ingiustamente accusati ARITMIA).

[157]See, Ordine Provinciale di Roma dei Medici-Chirurghi e degli Odontoiatri (2010).

[158]The sample used in the survey is representative of all Italian practicing doctors up to 70 years old with the exception of dentists.

[159]In particular, instrumental tests are used as a defensive tool by 75.6% of physicians, while 49.9% of doctors stated that they also resorted to hospitalization to reduce their malpractice exposure. This means that 22.6% and 11% of instrumental tests and hospital admissions respectively could be avoided.

in research and development in the country.

The second survey was performed in 2008 by the research center on criminal law and criminal policy 'Federico Stella'.[160] It involved 307 physicians, showing that 61.3% of the respondents have prescribed additional unnecessary diagnostic tests, while 26.2% have excluded high-risk patients from some medical treatments and 58.6% have asked for an additional unnecessary medical consultation. Moreover, 77.9% of interviewed doctors admitted a defensive behavior at least once during the previous month and younger physicians (92.3%) seem to resort to defensive practices more often than their older colleagues (67.4%). The same survey was replicated between October 2008 and January 2009 by interviewing 60 anesthetists and 64 surgeons.[161] The most interesting finding is that anesthetists are more inclined to practice defensive medicine than surgeons (88.3% against 76.1%). On the contrary, for both the subsets of interviewed clinicians, the most common form of defensive behavior is the addition to patients' records of unnecessary notes/comments, while the primary motivation that induces the defensive practices of physicians is the fear of malpractice litigation.[162]

Similar findings have been obtained by a third survey conducted in 2011 to assess the extent of defensive conducts specifically within the Italian Emergency Departments. Out of the 1.392 physicians, who took part to this study, 90.5% declared that they had adopted at least one defensive practice during the previous working month. In particular, 77.7% had prescribed unnecessary laboratory tests; 67.3% asked for a superfluous additional consultation; and 72.8% had included unnecessary notes/comments in medical records. The frequency of the adoption of defensive behaviors does not vary with respect to the characteristics of healthcare professionals. According to this study, the only factor that does play a role is the age of physicians. In fact, the percentage of those who admitted to practice defensive medicine increases up to 94.5% compared to the youngest subjects (26-36 age group), while it decreases to 84.4% for the oldest (60-70 age group). Additionally, 69% of the respondents identify the cause of their defensive conduct as the fear of being involved in malpractice litigation, while 50.4% want to avoid, in particular, requests for compensation. Finally, the adoption of defensive practices also turns out to be affected by physicians previous experience: in 50% of the cases, doctors are influenced by the past experience of their colleagues with malpractice litigation and in 34.2% of the cases by their own past experience.

As pointed out by Barresi et al. (2012), these surveys would suggest some general tendencies. First, there would be a widespread and pervasive use of defensive medical practices in Italy. Second, young physicians would seem to be more prone to adopt defensive behavior than their older colleagues, while socio-demographic characteristics other than age seem to have no impact. Thirdly, physicians would be induced to perform defensive practices mainly by the fear of being sued for medical malpractice and receiving damages requests.[163]

[160] Centro Studi Federico Stella sulla Giustizia Penale e la Politica Criminale (2010).
[161] Catino and Celotti (2009).
[162] See, Catino (2011).
[163] Another main concern of doctors refers to the possible negative reputational consequences. See, for instance, Sage (2004).

2.5 Conclusive Remarks

Italy has established its national healthcare system in 1978 with the aim of providing uniform and comprehensive medical care to all its residents regardless of the socio-economic conditions and residence of the individuals. The existing structure of the Italian NHS is the result of a series of reforms that took place in the last three decades and that have progressively fostered the autonomy of regional governments. Nowadays, therefore, there are three layers of administration. The central government is responsible for contributing to the funding of the NHS itself and for determining the national health plan, which, among others, defines the LEAs to be assured to the population and, more in general, the objectives and policy guidelines the NHS has to pursue. Regions further contribute to the funding of healthcare expenditures. Regional governments also enjoy a large discretionary power in order to translate national guidelines in a regional plan, while medical services are actually delivered through the local level, that is, through local health units assisted by public and private accredited hospitals. Despite a common framework and due to the greater autonomy recognized to regional governments over time, the NHS shows increasing differences among regions with respect to the organization of healthcare provision, health expenditures and financing.

With regard to the medical liability, the country is characterized by the absence of a specific statute law and the physician-patient relationship turns out to be interpreted as a contractual liability. As a consequence, when a clinician accepts -even tacitly - to treat a patient, a contract is concluded between the parties and the defendant will have to bear the burden of proof. In any case, a physician to be found liable need to have acted with negligence, that is, to have undertaken a degree of diligence below that of the *bonus pater familias*. Furthermore, injured victims can sue the doctor as well as the healthcare facility the clinician works for, because healthcare organizations are considered responsible for the actions of their employees.

In recent years, Italy, as well as other European and non-European countries, has been undergoing a medical malpractice crisis characterized by a steady increase in the number of malpractice claims. This has materialized in a rise of insurance rates applied to both clinicians and healthcare organizations and in the withdrawal of some private insurers from the insurance market for medical professional liability. In response to such a situation, Italian clinicians have formed different associations to discourage frivolous suits and attract attention on the high malpractice pressure they are subject to. At the same time, recent surveys indicate an increasing tendency of clinicians to adopt defensive behaviors to reduce their litigation risk.

Chapter 3

Limiting Noneconomic Damages As a Response to Malpractice Crisis

3.1 Introduction

Medical professional liability insurance yields significant social benefits as it fosters the supply of medical services and access to them. Nonetheless, over time both healthcare professionals and healthcare institutions have encountered increasing difficulties in finding appropriate coverage. Such a supply crisis is only partially explained by the traditional problems of the insurance industry.[1] In particular, the underwriting cycle of property and casualty insurance[2] has played a role, but additional and more relevant determinants of the malpractice crisis have to be sought in the specific risk insured and in the related peculiarities of the reference market. In this respect, the main driving factors of the sharp rise in insurance rates and of the consequential lack of coverage are generally recognized as the increase in both the frequency of malpractice suits and the average value of damages awards granted to victims. These two elements associated with the specific characteristics of the medical malpractice market tend to make this line of insurance unattractive for private insurers.

In response to the problems of availability and affordability of medical liability policies, governments have discussed and enacted various reforms primarily related to tort litigation.[3] These legislative changes have taken different forms,[4] for instance, the shortening of the

[1] See, OECD (2006) and Mello (2006b).

[2] The underwriting cycle is the cyclical tendency of insurance markets to undergo periods of hard and soft markets. During the former, insurance companies make their underwriting standards more stringent and increase premiums. Conversely, during the latter, high investments' returns are combined with quite limited claim costs and insurance companies may lower both their underwriting standards and premiums to keep attracting policyholders. For more details on the dynamics of the malpractice insurance market, see Neale et al. (2009).

[3] Governments are particularly concerned about the negative implications of a generalized lack of malpractice coverage and of unaffordable premiums in terms of both the cost of healthcare delivery and the behavior of doctors (i.e. defensive practices and reduction of medical services). See, Sloan (1985), Zuckerman et al. (1986), Danzon et. al (1990), Barker (1992), Kessler and McClellan (1996), and Viscusi and Born (2005).

[4] For a comprehensive discussion and overview of the different tort reforms implemented over time, see,

statute of limitations,[5] the modification of the collateral source rule,[6] or the modification of joint-and-several liability.[7] However, among these legislative interventions, a policy regarded as one of the most effective to contain medical malpractice expenditures and one that still plays a prominent role in the debate on medical malpractice is limiting noneconomic damages.

The distress suffered by the reference market has raised significant concerns related to the assessment of damages awards in malpractice claims.[8] In particular, the noneconomic component of victims' recoveries has been the most disputed issue and has attracted a lot of attention from scholars and legislators. Non-monetary losses have proven to be a very difficult subject for judges and juries given their controversial non-monetary nature and the lack of a clear and common framework for their assessment.[9] This situation has resulted in a significant variability of noneconomic compensations and in the potentially unfair treatment of injured parties, who have received different awards for supposedly similar health impairments. Besides erratic compensations, available data on noneconomic damages recoveries – mainly derived from the U.S. experience – also show that these compensations are characterized by a positively skewed distribution with a thick tail of very large awards at the high end.[10] These outliers represent a further source of uncertainty for insurance companies since they are generally more difficult to predict.

These trends are particularly worrisome, because noneconomic damages represent a predominant proportion of personal injury damages accounting for more than 50% (up to 70%) in malpractice cases.[11] Consequently, the erratic compensation of this title of damages constitutes one of the major challenges for insurers to face. Being unable to estimate their possible economic losses with reasonable certainty, insurance companies end up raising malpractice insurance premiums.[12] In extreme cases, where the uncertainty and variability of compensations are particularly high, insurance companies may withdraw from the whole segment of malpractice liability or from specific geographical areas. They may also avoid covering

for example, Sloan (1985), Barker (1992), The Congress of the United States (2004), and Mello and Kachalia (2010).

[5]Typically, the consequences of medical errors can materialize even after several years. Injuries occurrence and the initiation of a legal action are usually not simultaneous with the consequent emergence of the long tail for malpractice claims that makes insurers risk exposure more unpredictable. Consequently, a response to this problem has been found in shortening the statute of limitations that is the legal time period within which a patient might file a malpractice claim.

[6]The collateral source rule prohibits during trials to take into account the possible recoveries that a plaintiff has already obtained from source others than the defendant. The legislative interventions in relation to this rule aim at avoiding a double compensation and are of three main types: (i) allowing the introduction of evidence of compensation during the litigation; (ii) imposing the mandatory reduction of the collateral source from the awards; and (iii) making this offset possible but not compulsory.

[7]Reform joint-and-several liability consists in restricting or eliminating the rule, whereby an injured party can recover all the damages from any of the respondents, even though more than one party was responsible for the injuries.

[8]See, Studdert et al. (2011).

[9]See, Bovbjerg et al. (1989), Sugarman (2006), and Studdert et. al (2005).

[10]See, Studdert and Mello (2005), and Danzon (1984).

[11]See, Avraham (2006), Studdert and Mello (2005), Bovbjerg et al. (1989), and Viscusi (1988).

[12]See, Danzon (1988).

specific healthcare providers and/or offering specific types of policies.[13]

However, aside from the objective difficulties implied by the assessment of malpractice compensations, damages awards have received much attention from policymakers also for another reason. Compensations are often perceived by the public as the main determinant of high malpractice insurance rates due to huge damages granted in ostensibly trivial injuries.[14] In addition, this is accompanied by the further common belief that these excessive overall awards are substantially driven by their noneconomic component.[15] For instance, this perception is well reflected in the campaign for capping non-pecuniary losses carried out by the Bush Administration:

"*Anybody who goes into court and wins their case ought to get full economic damages. At the same time, we must prevent excessive awards that drive up costs, encourage frivolous lawsuits, and promote drawn-out legal proceedings. And that is why we need a reasonable federal limit on noneconomic damages awarded in medical liability lawsuits.*"[16]

In order to limit the adverse effects of the variability and unpredictability of the awards for pain and suffering, many countries have tried to rationalize this title of damages through the adoption of different types of caps. For example, as of June 2005, more than half of the U.S. states have introduced such limitations in their compensation systems and in others, there is a longstanding discussion on the possibility to impose ceilings on non-pecuniary losses and on how to structure them. The State of Washington created in 2005 a multidisciplinary task force on noneconomic damages to study and develop a plan for the adoption of an advisory schedule of noneconomic damages with specific reference to medical malpractice.[17] More recently, in 2010 the Medicare Payment Advisory Commission (MedPAC)[18] has conducted a study to evaluate several options for medical malpractice tort reform including the implementation of damages caps. The specific purpose of such a policy intervention would be to improve the U.S. medical liability system and its effects on national healthcare.[19] Outside the United States, some countries have opted for the introduction of simple limits on the possible payouts as in Canada, while others such as Italy and France have preferred more complex solutions,

[13]As noted by Avraham (2006), "*The uncertainty will make insurers charge potential tortfeasors 'ambiguity premiums' above the regular actuarial expected losses and the administrative costs load. This might cause firms to forgo activities in which they would otherwise engage if they could obtain lower-priced insurance.*" See, also Kunreuther and Hogarth (1992), Studdert et al. (2011), Studdert and Mello (2005), Geistfel (1995), and Bovbjerg et al. (1989).

[14]See, Studdert and Mello (2005). Very high compensations, however, represent a secondary issue for insurers compared to the variability and uncertainty of awards. In fact, the recoveries decided by juries are actually often reduced. This may be done, for example, by the judge ratifying the proceeding if the compensation appears not to be appropriate with respect to the evidence provided. Awards can also be reduced during the appeal if this takes place, or by high-low agreements or post-trial agreements between the parties. In this regard, see Vidmar (2009) and Hyman et al. (2007).

[15]See, OECD (2006), Studdert et al. (2006), and Kelly and Mello (2005).

[16]Bush (2002), available at: ¡http://georgewbush-whitehouse.archives.gov/news/releases/2002/07/20020725-1.html¿ (visited May 23, 2005).

[17]See, Studdert and Mello (2005).

[18]MedPAC is an independent Congressional Agency with the primary task of advising the U.S. Congress on issues related to the Medicare program. For more information: http://www.medpac.gov.

[19]See, Mello and Kachalia (2010).

which take into account the specific degree of severity of the injuries experienced by victims.[20]

The basic idea at the heart of limiting damages on non-pecuniary losses is that the provision of guidance to judges and juries in assessing this title of damages would limit both the variability and unpredictability of compensations for pain and suffering. This would, in turn, make it easier for insurance companies to predict their recoveries. If insurers face fewer difficulties in estimating their exposure, they would lower insurance rates and ensure the availability of malpractice coverage.[21]

The present chapter proceeds as follows: Section 3.2 illustrates the notion of noneconomic damages and the difficulties encountered in their assessment; Section 3.3 identifies the main theoretical pros and cons of limiting noneconomic damages awards; Section 3.4 briefly describes the functioning, advantages and disadvantages of the different methods to cap noneconomic losses. Section 3.5 analyses the evolution of the concept of noneconomic damages in Italy and the different mechanisms adopted to limit them; Section 3.6 illustrates the likely outcomes of capping noneconomic damages by reviewing the evidence provided by past research, and conclusions follow in Section 3.7.

3.2 Personal Injuries and Noneconomic Damages

Damages for personal injuries imply three conceptually distinct titles of damages. First, economic damages compensate the injured for the direct financial losses due to the impairment of her psychical and physical health, including healthcare costs and lost wages. Second, noneconomic damages cover all the harms suffered by the victim that do not imply direct economic consequences. Therefore, this title of damages may be compensated regardless of its impact on the victim's ability to work and it is used for awarding compensations for pain, suffering, emotional distress, disfigurement, loss of companionship, anxiety and fear resulting from the physical injuries suffered by victims. Third, punitive damages serve a twofold purpose: to punish the wrongdoer for her misconduct and callous disregard for the rights and interests of the injured party, and to discourage others from engaging in similar wrongful actions.

The evaluation of economic damages is generally not particularly problematic, because it is based on more objective and less questionable criteria than those used for the quantification of both punitive and noneconomic damages. Therefore, although plaintiffs' recoveries for economic losses can be large, they are generally less disputable. On the contrary, a much-debated question is the assessment of the other two titles of damages. However, whilst punitive damages find common application in business and contract litigation, they are very rarely awarded in medical malpractice claims and more in general in personal injuries claims.[22]

[20] For an overview of the different solutions adopted by the European countries, see in particular Rogers (2001), and Bona and Mead (2003). While for a description and comparison of the mechanisms adopted in Europe and in the United States, see Comandè (2005).

[21] See, Sloan (1985).

[22] For an overview of the adoption and evolution of punitive damages in the United States, England and in some other major jurisdictions, including in European law, see Koziol and Wilcox (2009).

As a result, noneconomic losses are the most controversial issue in malpractice cases and their assessment turns out to be particularly difficult due to the non-monetary nature of this title of damages. Thereby, in stressing the importance of policies able to lower the level and variance of compensations, the literature identifies caps on noneconomic damages as the most effective to do so.[23]

As pointed out by Karapanou and Visscher (2010), the awards granted for pain and suffering should primarily compensate the harm experienced by the victim.[24] For this reason, it should not simply cover all the immaterial losses suffered, but it should be also adjusted according to the severity of the impairment of the physical and psychical health, the magnitude of the pain, as well as the emotional distress and the reduction of enjoyment of life directly resulting from the specific injury in question. These criteria are commonly recognized as the proper basis for the assessment of noneconomic damages. However, legal jurisdictions often differ in the way they apply them in malpractice litigation and consequently also in the magnitude of recoveries victims receive for pain and suffering. Moreover, the valuations of non-pecuniary losses differ widely not only among jurisdictions, but even and more disturbingly within jurisdictions.[25] In particular, as shown by several empirical studies, awards for pain and suffering tend to increase with the severity of the injury suffered, assuring some degree of vertical equity, but they fail to assure horizontal equity.[26] In fact, equivalent impairments often receive different compensations leading to the iniquitous treatment of injured parties.[27]

This variability in the assessment of noneconomic losses within a jurisdiction can negatively affect the justice system itself, undermining the credibility and increasing the unpredictability of compensation schemes. The consequence is to "*increase the cost of liability insurance; undermine deterrence; allow case-to-case inequities to flourish; and weaken the credibility of injury compensation in the eyes of the media, the public, and policymakers.*"[28] When damages compensations received by plaintiffs highly differ, insurance premiums tend to increase, because insurance companies encounter greater difficulties in predicting damages

[23]See, Avraham and Bustos (2010), and Kessler (2011).

[24]Besides the compensation for the harm suffered by the victim, the literature generally identifies other two separate goals of non-pecuniary losses: satisfaction and deterrence. Satisfaction refers to recognition of the injustice suffered by the victim, see Karapanou and Visscher (2010), and Bovbjerg et al. (1989). Differently, deterrence aims at discouraging people from engaging in the same acts that have caused the immaterial losses, see Studdert and Mello (2005), and Karapanou and Visscher (2010). However, the compensation of the victim is recognized as the primary aim of non-pecuniary damages. In fact, satisfaction is accepted as a separate goal only by some countries (e.g. Spain, Belgium and Greek), whereas for deterrence, "*European legal literature seldom mentions it as a separate goal, but in the law and economics literature it is paramount.*" See, Karapanou and Visscher (2010), p.54.

[25]See, G. Comandè (2005), Studdert et al. (2011), and Rogers (2001).

[26]Horizontal equity refers to the award of similar compensations for similar injuries, while vertical equity implies the assignment of higher awards for more severe injuries.

[27]See, for instance, Bovbjerg et al. (1989), and Studdert et al. (2004). In this respect, Flatscher-Thöni et al. (2013) empirically investigate the impact of two different approaches adopted by Austrian courts to assess non-monetary losses, on the compensations received by victims for this title of damages.

[28]Studdert and Mello (2005), p. 26.

awards and their loss exposure becomes more uncertain.[29] In the hypothesis of particularly high uncertainty, insurers may even prefer to abandon the reference market or decide to limit their supply.[30]

The lack of a coherent approach for the evaluation of damages for pain and suffering and erratic compensations may also undermine the deterrence effect of the tort system itself. Deterrence relies on the capacity of potential defendants to decide the level of precaution to adopt. This choice should be the result of rational cost-benefit evaluations based on three elements. First, the costs of precaution necessary to reduce the probability of injuries. Second, the liability costs that defendants would bear in the absence of such safety measures. Third, the size of the potential sanction associated with the injurious behavior. The unpredictability of awards and the uncertainty of insurance costs make these evaluations more complicated. If potential defendants cannot determine costs with a reasonable degree of confidence, then the comparison of the different possible levels of care to undertake is unfeasible and this may lead to over- or under-deterrence.[31] With respect to medical malpractice, over-deterrence results in defensive medicine phenomena, whereas under-deterrence leads to the adoption of a lower level of precaution and resources than are socially desirable.[32]

3.3 Pros and Cons of Capping Noneconomic Damages

The rationale behind caps on noneconomic damages is to mitigate the great variability in the compensations granted to injured parties and attenuate the perception of a high degree of arbitrariness in the assessment of damages for pain and suffering.

These goals are pursued substantially by restricting the discretion of both juries and judges, which are provided with some sort of guidance to decide the level of compensations to award to victims. This discretionary power is not necessarily bad in itself as it makes it possible to actually adjust the recoveries of injured parties to the specific circumstances of each single case considered. Furthermore, the discretion of juries and judges also makes it possible to avoid an excessive degree of uniformity of the case law and a too rigid treatment of victims. Nonetheless, overly wide discretionary power is deemed to be the main cause of

[29] See, Danzon (1991) and Danzon (1988). In this respect, Studdert et al. (2011) precisely observe, "*Every malpractice insurance premium dollar includes an amount that represents the insurer's uncertainty about its exposure. The greater the uncertainty is, the larger that amount will be.*" See, Studdert et al. (2011), p. 60.

[30] See, Bovbjerg et al. (1989), Kunreuther and Hogarth (1992), Geistfeld (1995), Studdert and Mello (2005), and Studdert et al. (2011). A well-known example of an insurer's withdrawal from the malpractice insurance market is the exit of St Paul, one of the leading medical liability insurers. This company abandoned the U.S. and European markets at the end of 2001 with particularly negative consequences in terms of coverage availability in countries such Ireland, France and the U.S. The American market also experienced the withdrawal of Phico and Frontier Insurance Group, whereas the Medical Inter-Insurance Exchange decided to keep operating only in New Jersey. See, OECD (2006), pp. 16-17.

[31] "*In the medical malpractice context, this means that healthcare may suffer from the cost associated with defensive medicine or the suboptimal level of patient safety that results when providers are not motivated to take steps to prevent adverse events*". See, Studdert and Mello (2005), p. 27. On the possible consequences in term of over- or under-deterrence, see also Geistfeld (1995), Avraham (2006), and Studdert et al. (2011).

[32] On the phenomenon of defensive medicine, see Chapter 1.

both the great variability and unpredictability of the awards for pain and suffering. Hence, it exacerbates the difficulties encountered by insurers in dealing with the malpractice insurance market. The decision of limiting noneconomic damages entails a trade-off between a higher level of uniformity and predictability of compensations and a lower degree of flexibility in assessing non-monetary damages. Yet, the extent to which these effects occur or might occur in reality depends on the actual type and features of the caps adopted.

In particular, the limitation of non-pecuniary losses should primarily succeed in reducing the number of the largest awards and, therefore, decreasing the variance of compensations. Compensations of non-pecuniary losses clearly show a positively skewed distribution with the vast majority of victims' recoveries placed at the lower end and a relatively limited number of very high awards at the upper end of the scale.[33] This long tail of very large awards represents a problematic issue for both insurers and healthcare providers. In fact, insurance companies face the difficulty of predicting and paying particularly large compensations that are a cause of financial stress, while healthcare organizations may not be able to deal with them if they are self-insured. From this perspective, limiting noneconomic damages is expected to contain and, to some extent, reduce the overall compensatory damages plaintiffs can obtain. Ultimately, by containing payouts and increasing the predictability of awards because of the reduced variance of compensations, caps are expected to positively impact on insurance costs and premiums paid.

In addition, caps may affect the decision of injured parties to file a claim. Specifically, ceilings on noneconomic damages may discourage injured parties to engage in trials, but they may also facilitate settlements outside the courts by restricting the range of potential recoveries. By limiting victims' recoveries, caps may also lower the degree of malpractice pressure perceived by clinicians, potentially leading to less deterrence and, consequently, to more negligent medical accidents.

Limiting noneconomic losses also significantly affects both the horizontal and vertical equity of damages. In particular, regardless of the type of caps applied, these ceilings may have the great advantage of promoting horizontal equity of compensations at least for the highest severity injuries. In fact, they should make the awards for the most severe impairments fall at or near the ceiling itself, increasing the degree of homogeneity of this type of awards. On the contrary, the way in which caps can influence the vertical equity of compensations depends on the actual type of limitation that is implemented. As a general principle, vertical equity is desired in order to avoid an inequitable treatment of victims. Therefore, caps should be elaborated with the objective of promoting the assignment of reasonably different awards for injuries that involve very different degrees of disability.

Notwithstanding, as pointed out by several scholars,[34] limiting noneconomic damages can have unintended negative effects due to the difficulties entailed by their implementation. Consequently, although they are primarily advocated to lower overall compensations, they may actually not reach such a result. This is the case when judges and juries look at them, rather than to an award of zero, as the starting point to determine, through consecutive

[33]See, Bovbjerg et al. (1989), Studdert et al. (2004), and Studdert and Mello (2005).
[34]See, for example, Durrance (2009) and Sharkey (2005).

adjustments, the final recovery. Caps may also fail to reduce total damages compensations due to another unintended effect known as the crossover effect.[35] In presence of ceilings on non-pecuniary losses, some portions of these losses can be incorporated in the economic damages that are not affected by any limitation. This phenomenon can find two possible explanations. First, even assuming that attorneys always pursue the maximum overall compensatory award regardless of the implementation of noneconomic damages caps, it can be that they reconsider the amount of the economic and noneconomic components of these awards when they deal with such ceilings. Second, especially when juries are appointed to determine the total damages awards, jurors may have a basic idea of the amount of money a victim should receive and a less strict vision of the different categories of damages than the one provided by the law. Therefore, juries may easily increase the economic component of the overall compensation to reach the figure they have in mind, neutralizing the effect of caps.

In any case, the nature of the actual consequences derived from the rationalization of noneconomic damages is determined by the type of ceilings implemented and their features. Moreover, the magnitude of all these effects furtherly depends on the level at which these limits are set, and on how much such a level differs from the appropriate compensation for high-severity injuries perceived by the public opinion.[36]

3.4 Key Features of Caps Design

Caps on noneconomic damages can take different forms that vary in terms of both basic structure and specific characteristics. First, they may have either compulsory or advisory nature. In the former case, judges and juries are obliged to respect them even when their application would seem unfair. On the contrary, in the latter case, these limits provide a sort of benchmark compensation. Thereby, juries and judges may waive them in order to adjust the award to the specific characteristics of the case concerned.

Caps can also be implemented differently with respect to both claims and litigants. Specifically, they may find a generalized application to all non-monetary losses, as well as a specific application to only some kinds of claims such as, for instance, medical malpractice claims or – even more narrowly – wrongful death claims. In addition, their application can refer to the amount of money that an injured party may obtain, or to total amount for which each defendant may be found responsible.[37]

Finally, as to their structure, caps on pain and suffering can have three main different forms: they can be flat caps, tiered caps or schedules. The complexity of these different mechanisms to limit damages, their possible benefits in terms of both horizontal and vertical equity of compensations, as well as of greater predictability of awards, increase moving from

[35] See, Sharkey (2005).

[36] See, Mello and Kachalia (2010).

[37] As for the case of caps applicable to each defendant, Mello and Kachalia (2010) also highlight that this "*choice reflects a particular notion of equity, though it may result in inequitable awards in cases where multiple defendants have different shares of fault or causing the plaintiff's injury.*"

flat caps to schedules.

3.4.1 Flat Caps

A flat cap foresees the simple imposition of an upper bound to the amount of money that can be awarded for pain and suffering. For instance, one of the oldest and most well-known example of flat caps on non-pecuniary losses is California's cap, introduced in 1975 in the State of California through the Medical Injury Compensation Reform Act (MICRA) and set at $250,000.

Such an upper limit finds application with respect to any type of injury regardless of the severity of the impairment involved. Juries and judges cannot award to injured parties compensations that exceed the value of the cap. This generalized applicability makes flat caps an instrument of great simplicity in term of implementation.

In addition, this kind of ceiling has the advantage of reducing, if not eliminating the long tail of the compensation distribution (the actual effect depends on the value at which this limitation is set). In relation to the most severe health impairments, juries and judges are obliged to award recoveries that are below or, at the most, equal to the upper limit decreasing the number of very large unpredictable compensations. The lower the amount at which these ceilings are fixed, the more stringent is the potential control over cost that can be exerted. Still, the legislator has to be careful in not setting this ceiling at a level too low, penalizing the victims of the more serious cases. Consequently, the major difficulty for this mechanism to rationalize noneconomic losses lies precisely in the choice of the actual value at which to set the upper bound for compensations.[38]

If recoveries for high severity injuries fall at the level of the flat ceiling, this also means that the heterogeneity among this type of compensations decreases. Flat caps lead to the award of similar compensations for injuries with similar degrees of severity in relation to the most serious cases. Therefore, they certainly entail benefits in term of horizontal equity, but these benefits are limited to the case of particularly severe injuries. Conversely, the possible results in terms of vertical equity are poor even with respect to high severity injuries. In very serious cases, juries and judges are willing to grant very high compensations. Nonetheless, since compensations cannot in any case exceed the set upper limit, there is less room for adjusting these awards to the specific circumstances of the case concerned. Therefore, under the hypothesis of a flat cap, it is likely that the recoveries awarded will coincide with the cap itself or will be very close to it. This means that injuries with a severity level that is high, but that cannot be considered equal, are likely to receive final compensations, which are identical or differ only slightly.

Moreover, even though flat caps are effective in avoiding excessive recoveries, they turn out to perform poorly in reducing the variability of payouts since they leave unchanged the discretionary power of juries and judges with respect to the compensations below the ceiling itself. Flat caps simply limit the awards that can be granted without providing any additional

[38]With respect to the mentioned example of the California cap, most U.S. states have considered this ceiling too stringent, preferring amounts between $250,000 and $500,000.

guidance to assess the appropriateness of these awards. Whilst this mechanism is effective in coping with very large damages, it does not affect the compensations that fall below the level of the imposed ceiling. Hence, these compensations might still be deemed as excessive in relation to the injury suffered by victims. At the same time, flat caps also fail to address the issue of inappropriately low awards since they set only upper bounds to compensations.[39] Consequently, "*any awards below the cap are subject to the same claims of arbitrariness and unfairness that plague the current system.*"[40]

3.4.2 Tiered Caps

Noneconomic damages can be rationalized also through tiered caps. In this case, we do not have the introduction of a single limit on the awards victims can receive, but rather the implementation of different ceilings for different kinds of injuries. Tiered caps can be seen as a system of flat caps, whereby injuries are divided into different basic categories according to severity and a flat cap is then assigned to each of these groups.[41]

Compared to flat ceilings, this instrument is more difficult to implement. The legislator has first to identify the different types of injuries and, second, to determine a different upper limit for the compensations that can be awarded in relation to each of these groups. An example of tiered caps can again be found in the American context, where the State of Ohio set a general ceiling at $350,000, which is raised to $500,000 in case of permanent disability.[42]

Likewise in the hypothesis of flat ceilings, there are gains in terms of horizontal equity compared to the case in which there is no cap at all. The compensations for the most serious injuries again must fall below, or at the most be equal, to the level of the ceiling imposed on them. Yet, the problems of large outliers and of the subsequent over-evaluation are mitigated with a positive impact on the variance of compensations. In addition, tiered caps replicate these outcomes with respect to all the different groups of injuries they foresee, yielding higher benefits in terms of horizontal equity than flat caps.

Tiered caps are also more effective than flat ones in promoting vertical equity. The limits imposed on compensations vary according to the severity of the impairment involved. Therefore, they still make it possible to award higher amounts to more severe injuries, entailing a greater modulation of compensations. For instance, two extreme cases, such as the total paralysis of the injured party and the death of the victim, are likely to receive similar, if not identical, compensations in the hypothesis of a flat cap. In both these cases, in fact, it is reasonable to expect juries and judges to be willing to award very high compensations, which will be close or even coincide with the flat ceiling. By contrast, the result would be different with tiered caps if, as in the case of the state of Maryland, there is a general cap of $650,000 for noneconomic personal injuries that is raised to $812,500 in case of death.[43] In fact, this means that the final compensations would not result in the same amount of money and not

[39] Studdert et. al (2011).
[40] Geistfeld (1995), p. 790.
[41] Tiered caps usually divided injuries into two or three groups. See, Studdert et al. (2011).
[42] See, Studdert and Mello (2005).
[43] See, Studdert and Mello (2005).

even necessarily in very similar sums. On the contrary, the victim suffering of total inability would receive an award that is likely to be close to $650,000, while the death of the injured party can be compensated with a greater amount (up to $812,000). As a result, awards can be better differentiated even among the more serious injuries.

Again, however, the discretionary power of juries and judges and the correlated problem of the variability of compensations is maintained within each of these injuries groups. Tiered caps, as the flat ones, fail in offering further guidance to estimate the appropriateness of compensations within each tier and they end up not addressing the issues of the under-compensation and the over-compensation of damages for the injuries that fall within each tier.[44]

3.4.3 Schedules

Noneconomic damages schedules are a more advanced version of tiered caps and substantially consist in tables or matrices of damages. As tiered ceilings, they make it possible to adjust the recoveries for non-monetary damages according to the severity of the health impairment experienced by victims.[45] Yet, they require a greater effort and a higher level of detail in grouping the different kinds of injuries. Moreover, the compensations they provide correspond to the actual amount that has to be awarded (i.e. compulsory schedules) or serve as guideline in the assessment of damages (i.e. advisory schedules).

Their design is more complex than that of caps and requires: (i) the categorization of health impairments in a tiering system, whereby the different groups of medical injuries are ranked according to their severity; (ii) the translation of the differences in term of severity among tiers through relative value weighs;[46] and (iii) the determination of a monetary value or a monetary value range for the compensations of non-pecuniary losses in relation to each severity class.

In particular, designing a schedule for non-pecuniary losses poses two main difficulties. The first problem consists in the creation of the injury severity classes, thus the choice of the severity measure to employ. As highlighted by Mello and Kachalia (2010), several methods can be used to group injuries each of which has its pros and cons.[47] For instance, one option is the adoption of the nine points scale developed by the National Association of Insurance Commissioners (NAIC),[48] that ranks medical malpractice injuries according to the associated

[44]Studdert et al. (2011).

[45]The basic intuition behind the choice of linking the recoveries to injuries severity is that a more severe health impairment should entail higher non-pecuniary damages, even though compensations would not necessarily grow following a linear path. See, Bovbjerg at al., (1989).

[46]The idea is to assign to each tier a numerical weigh reflecting the severity of the related group of injuries. So that, these weighs increase passing from one tier to the following one. In particular, the purpose of these weighs is to permit "*comparison of injuries in different cells [of a schedule], which is useful for probing the validity of the scale.*" (i.e. the severity metric used to group injuries and rank the tiers). See, Studdert et al. (2011), p. 67.

[47]For a discussion about the validity of the different methods, see Studdert and Mello (2005).

[48]The National Association of Insurance Commissioner is a clearinghouse for regulator in the U.S. For further information: http://www.naic.org.

level of disability. This scale foresees nine levels of disability, ranging from one for emotional disability only, to nine for death, and provides for each of them an illustrative sample of injuries. A second possibility is to appoint a group of experts to scale injuries as happens in the Swedish and Danish compensation systems. A third method implies the application of one of the different health utilities indexes that have been developed over time as, for example, the quality-adjusted life years (QALYs).[49]

The second major problem is the assignment of both value weighs and monetary values to each severity tier. In particular, the monetary value assigned to each injury group should represent an appropriate and fair compensation for non-pecuniary damages for the injuries within each class. There is a number of approaches that can be used to set these values and each of them has its own advantages and disadvantages, thus the difficulty lies in choosing one value that will be considered socially and politically legitimate.[50] A first option is to determine these values on the grounds of the compensations awarded in previous, similar claims. A second option is to leave the task to a committee or commission consisting of members of the different stakeholders' groups. Such a commission/committee could analyze the available data on plaintiffs' recoveries and malpractice cost and examine the compensation schemes adopted in other states or countries. This type of commission/committee could also be replaced by a group of experts in the fields of law, medicine and decision science. Thanks to their expertise, these experts could be able to better analyze the existing empirical research on the impact of different injuries on victims' life.

The difficulties encountered in the determination of the monetary values include also the choice of whether to opt for a single monetary value, multiples values or a range of values for each group of injuries. A more limited number of values assures a higher level of uniformity and predictability of compensations. However, a greater flexibility, thus a greater capacity of adjusting awards to the specific circumstances of the case concerned is possible only by increasing the number of values. Value ranges are more effective in protecting juries and judges discretionary power in evaluating damages. If the preferred option is to assign only one value to each tier of injuries severity, then another possible solution to determine these values is the application of a multiplier of the compensation received for the economic loss or medical expenses.[51]

Besides the basic tiering structure solely based on the degree of disability experienced by victims, a schedule can be characterized by a more sophisticated frame, that takes into consideration some specific features of victims themselves. In practice, the inclusion of these further types of information requires an additional cell within each severity group turning the schedule from a table into a matrix of damages. The most frequent additional dimension is victims' age. This choice is justified by the consideration that younger victims will suffer the physical permanent impairment and its consequences for a longer period than older victims

[49] See, Geistfeld (1995) and Karapanou (2013).

[50] For an overview of the advantages and disadvantages of the different approaches to determine the monetary values of each tier of a damages schedule, see Studdert et al. (2005b).

[51] See Bovbjerg et al. (1989). Anyway, in order to choose the multiplier to apply, it will be necessary to resort to one of the other methods that can be used to set the monetary values.

would, while their recovery of such injuries is expected to be faster.[52]

Despite their complexity, several countries have adopted damages schedules. For instance, this peculiar type of caps is used in the civil legal system in Belgium, France, Netherlands, Hong Kong and United Kingdom. They find application also in the damages compensation schemes for traffic accidents in Finland or for medical injuries in Sweden and Denmark.[53] The appeal of damages schedules lies in their capacity to promote both horizontal and vertical equity, while reducing the variance and unpredictability of compensations. Their tiering structure serves to group into a same class injuries considered similar with respect to the severity measure employed. As a result, injuries within a same group will receive the same or a similar compensation for noneconomic damages, enhancing horizontal equity. Moreover, each group is characterized by a higher severity level compared to the group that precedes. Hence, the level of noneconomic losses assigned to each tier will increase as the severity level of the related injuries category intensifies, promoting vertical equity. Consequently, damages schedules have the great advantage of ensuring similar compensations for similar injuries, while assuring the assignment of higher awards to more severe injuries.

Damages schedules also constitute a better and more comprehensive response than flat or tiered caps to the problems of the variance and unpredictability of noneconomic losses.[54] Flat and tiered caps mainly deal with the problem of the long tail of damages' distribution represented by very large compensations. Reducing the number and magnitude of these extreme outliers, they succeed in dealing with over-valuation. Nevertheless, the broad discretionary power of juries and judges in assessing the recoveries within the range remains unchanged and the subsequent problem of the variability of the compensations below the ceiling remains unaffected. Conversely, damages schedules provide a quantification of the amount of money to be awarded on the grounds of objective common criteria (e.g. severity degree and injured party's age). In this way, they eliminate the extreme outliers while restraining both the discretion of juries and judges and the variability of compensations.[55] In fact, even when they are not compulsory, schedules provide a benchmark compensation at which juries and judges should look while assessing damages.

3.5 Notion and Compensation of Noneconomic Damages under Italian Law

The Italian compensation system is based on a dual model, which distinguishes between economic and noneconomic damages. In particular, the compensation of the latter category of damages is stated under article 2059 of the Italian civil code, while the definition of non-

[52] See, Geistfled (1995), and Bovbjerg et al. (1989).

[53] See, Comandè (2005), Studdert and Mello (2005), Sugarman (2006), Mello and Kachalia (2010).

[54] Shapiro and Rodriguez (2009).

[55] As suggested by Bovbjerg et al. (1989), the choice between a basic tiering structure and a matrix version of schedules "*depends primarily on how much one thinks non-economic damages should be individualized, how much one trusts juries to exercise discretion, and the importance one attaches to achieving similar results in similar cases.*"

monetary damages has to be found in the case law.

According to the Italian jurisprudence, noneconomic damages for personal injuries include three main different types of non-monetary losses. First, damage to health (so-called *danno biologico*) is intended to compensate the impairment of the victim's physical and/or psychical health regardless of the lost earning opportunities for the injured herself, and it covers, among others, disfigurement and loss of companionship. Second, damage for moral suffering (so-called *danno morale*) is awarded for the emotional distress, pain, suffering, anxiety and fear suffered as the result of the physical injuries. Third, existential damage (so-called *danno esistenziale*) covers the situations in which victims are forced to renounce carrying out non-pecuniary activities due to experienced injuries. It differs from damage for moral suffering, because it does not refer to pain and suffering, but rather to the impossibility to perform specific activities. At the same time, it is also different from damage to health, because it does not require the impairment of the victim's physical integrity in order to be awarded.[56]

These different types of noneconomic losses do not constitute independent titles of damages. They can be employed solely for descriptive purposes and, in any case, the title of noneconomic damages is unique in its substance. Therefore, courts have to be careful not to compensate twice the same harm derived from a personal injury by giving it different names.[57] Over time, damages to health have proven to be the most important title of damages since normally victims always receive a compensation for such damages in personal injuries cases.

However, the idea of compensating noneconomic damages is quite recent in the Italian legal system and has been the result of a complex process. The concept of noneconomic losses was debated in the legal literature for the first time in 1962, even though non-patrimonial damages to persons had already attracted the attention of many practitioners.[58] In the beginning, personal injuries damages were entirely identified with the economic loss suffered by victims because of the deterioration of their ability to work.[59] According to this interpretation, the Court of Florence in its decision of 5 January 1967 regarding the compensation for personal injuries of a 70 year old pensioner stated that "*people without any value can exist, as in the case of those who, because, of old age, illness or any other reason, are absolutely not fitted to any earning producing activity.*"[60] In the following decade, this title of damages gained more and more importance. Specifically, the significant increase in the number of victims of car accidents[61] and more in general of injuries not related to any criminal act started to modify judges' perception of fairness in compensation. This led to question the traditional interpretation, whereby non-patrimonial damages were recognized only when a criminal act was committed. As a result, starting from the eighties, the national jurisprudence on damages for personal injuries has undergone profound changes that culminated in

[56] See, Chindemi (2011), and Carnevale and Scarano (2010).

[57] Italian Supreme Court n. 18461/2011 and n. 5230/2012. With respect to noneconomic losses for personal injuries, the Italian tort law system does not foresee the award of punitive damages. For more details, see A. Scarso (2009).

[58] See Bunsnelli and Comandé (2001).

[59] Gentile (1962), p. 669.

[60] Tribunale di Firenze, 5 January 1967, in *Archivio della responsabilità civile*, 1969, 130.

[61] See Busnelli (1989).

the redefinition of noneconomic losses.

To introduce the right to compensation outside the realm of criminal cases, courts relied on the constitutional right to health (Article 32 of the Italian Constitution). However, the attempts to introduce the right to compensation outside the realm of criminal cases generated a jungle of different approaches and criteria, which varied widely both across and within courts.[62] At the beginning of the eighties (1981-1984), the Court of Cassation intervened in the debate as the court of last appeal for both criminal and civil jurisdictions, supporting the constitutional approach to personal injury damages proposed by the lower Courts of Genoa and Pisa. According to this approach, the Italian Constitution recognizes and protects health as a fundamental right to which everyone is entitled. Consequently, any harm derived from the violation of this right must find compensation even when the ability to work is not impaired.[63] Moreover, by accepting the possibility of compensating damages even if they do not have a patrimonial content, the Court no longer linked this compensation to the existence of a crime.[64]

Once the right to compensation of noneconomic damages was made, the big issue was how to calculate the compensation itself, given that this was not related to a strictly economic criterion. In fact, notwithstanding their importance, the quantification of damages for pain and suffering was left to the case law. Unsurprisingly, given the lack of safe and reliable criteria to determine this title of damages, the evaluations of the different courts and even of the different sections of a same court have varied widely.

This divergence in the determination of noneconomic losses has led to the emergence of the need for an assessment that must be equitable. At the same time, this evaluation must also be coherent with the kind of health impairment involved and, thus, with the loss involved.[65] This has fostered the research for a quantifying method that "*had a double means of assessing damages, which would primarily base uniformity on a medical evaluation of the psychophysical disability and on the possibility of extrapolating homogeneous monetary guidelines from prior awards.*"[66] The Constitutional Court publicly invoked:

"*a criterion that fulfills, on the one hand, the need of basic monetary uniformity (the same impairment cannot be evaluated in a too different way from one individual to another) and, on the other hand, the need of elasticity and flexibility to adjust awards to actual effects of the ascertained disablement on activities of daily life.*"[67]

Trying to achieve the uniformity and measurableness called upon by the Court of Cassation and the Constitutional Court, lower courts started to elaborate their own equitable criteria and solutions. They aimed at containing the variance of victims' recoveries – at least within a jurisdiction – by providing guidance to their judges in the determination of immaterial losses in personal injuries cases. In particular, the Italian tribunals started on a voluntary

[62]Reasons for these differences mainly rely on ideology and political believes. See, Consiglio Superiore della Magistratura (1989).

[63]Court of Cassation, 6 June 1981, n. 3675 and Court of Cassation, 6 April 1983, n. 2396.

[64]See Busnelli and Comandè (2001).

[65]The Italian Supreme Court clearly expressed this need in its sentence of 13 January 1993, n. 357.

[66]Comandè (2005), p. 289.

[67]Constitutional Court, 14 July 1986, n.184. On the matters, see also See Busnelli and Comandè (2001).

basis to adopt and develop their own damages schedules, using the experience of other European countries, mainly France. Medical experts were put in charge of the definition of the percentage points of disability to assign to the possible different injuries.[68] Furthermore, in order to guarantee consistency within courts' decisions, monetary values were defined according to the previous cases.[69] Hence, the introduction of schedules was expected to increase the degree of certainty in assessing compensations, but not to decrease deterrence with respect to the past.

In 1986, the 184 Constitutional Court decision ruled the constitutionality of the use of schedules to settle compensations in case of noneconomic damages. Nevertheless, the adoption of these schedules was voluntary to the extent that some courts still prefer to leave these types of evaluation to judges' discretion, refusing to apply any kind of damages cap. In particular, courts opted for scheduled damages on the base of the decision of their judges: judges belonging to a same court should vote for the implementation of schedules. When adopted, schedules apply to injuries of every nature, from car to work accidents, as well as medical malpractice.

This voluntary and uncoordinated process has led to the creation and application of different schedules, which still may determine systematically diverging awards among the Italian tribunals. The Legislator tried to face this persisting problem by imposing a uniform schedule of noneconomic damages for the first nine percentage points of disability (the so-called *micropermanenti*).[70] However, this has been only a partial solution since courts have remained responsible for the determination of the damages for the most serious cases (i.e. for all the other percentage points of disability).

3.5.1 The Evolution of Noneconomic Damages Caps in Italy

In Italy, noneconomic damages schedules have been preferred to other forms of caps.[71] Specifically, besides the purely equitable evaluation, three main different mechanisms of calculation have emerged among the different methods used by courts over time to assess noneconomic losses: (i) the method of three times the annual social pension (so-called Genovese method), (ii) the Pisan method of the evaluation by point or Pisan schedule; and (iii) the Milan method of point tables or Milan schedule.

In particular, the court of Genoa has been the first to base the compensations for non-pecuniary damages on objective criteria. This court moved from the consideration that the variations in the awards received by the victims could be justifiable only by taking into consideration the duration and characteristics of the health impairment suffered. Consequently,

[68] Comandè (2005).

[69] Sella (2005).

[70] See, Law 57/2001.

[71] In the case of Italy, the mechanisms elaborated to rationalize noneconomic damages are a more articulated version of the traditional damages schedules. As explained in details in the present section, they consider each percentage of injury severity individually, rather than tiers of disability percentages. Moreover, they provide a formula based on the severity of injuries and the age of victims to quantifying damages. Thereby, they are an extreme form of schedules, but hereinafter for simplicity, we refer to them as schedules.

the sole factors that could affect the assessment of the awards for noneconomic losses are the victim's age and gender. In fact, the age affects the potential length of the health impairment, while the gender may influence age expectancy.[72] On the grounds of these considerations, the court of Genoa decided to calculate noneconomic damages solely on the basis of the severity of the harm suffered by victims and of the age and gender of injured parties. As reference monetary parameter, the Court adopted the national average income per capita. Later, this was replaced by three times the annual social pension.[73] As a result, the compensations to be awarded were computed as three times the annual social pension multiplied by the disability percentage and by an age-related coefficient. However, this method has been abandoned in 1993 because, as stated by the Court of Cassation,[74] noneconomic damages, that are defined as impairments of physical health, cannot be determined on the grounds of a criterion that refers to the real or alleged income of plaintiffs. Noneconomic damages must be compensated regardless of an impairment of the earning ability. In addition, a further drawback of this method was the excessive rigidity: the assessment of non-monetary losses was the result of the mechanical application of this criterion without any possibility to adjust the award to the specific circumstances of the single case under scrutiny.

The court of Pisa tried to offer a different method to assess compensations of noneconomic damages, that could represent an intermediate solution between the excessively elastic mechanism of the purely equitable evaluation and the extremely rigid method of the court of Genoa. Judges in Pisa looked at the French experience of *calcul au point* and elaborated the criterion of the evaluation by points. Specifically, they moved from the consideration that the medical-legal assessment of the permanent disability is made on the basis of the medical evidence provided by expert medical witnesses and translated into percentage points. Therefore, they decided to define a monetary value corresponding to each disability percentage point.[75] This monetary value was computed as the average of the previous compensations awarded in cases of minor disability (between 1 and 10 percentage points).[76] The final compensation was determined by multiplying the invalidity percentage by this monetary point value, then the figure obtained could be increased by up to 50% on the grounds of objective factors such as, for instance, the victim's age, the need for further medical treatments, or the nature of the injuries (aesthetical, neurological or functional).

[72]See, Sella (2005).

[73]The parameter of the annual social pension was chosen by looking at the routine procedure followed for the compulsory motor vehicles insurance (Law 39/1976). This procedure set the criteria to compute the income for the assessment of the damages for the loss of profit, as well as for temporary and permanent disability. In particular, with regard to the impossibility of estimating the personal income of a victim, judges should have considered as a conventional value an income at least equal to three times the social pension.

[74]Court of Cassation, 13 January 1993, n. 357. See also, Court of Cassation, 16 November 2000, n. 14874; Court of Cassation, 8 January 1999, n. 101; Court of Cassation, 30 October 1998, n. 10897; Court of Cassation, 24 June 24 1997, n. 5635; and Court of Cassation, 14 May 1997, n. 4236

[75]Specifically, the definition of the disability percentage points has been left to medical experts (Comandè (2005).

[76]The court of Pisa decided to base the determination of this monetary point value on the first ten percentage points of disability, because in almost all the cases the injuries related to these points of disability do not actually affect the earning ability of victims. Therefore, it was reasonable to believe that the related awards reflected the sole damage to health. See, Visentini (2009).

The case law has recognized the validity of the Pisan schedule.[77] In particular, the Constitutional Court with the sentence 184/1986 has identified two major advantages in the application of the Pisan method. On the one hand, the determination of compensations is based on predetermined monetary values, assuring an equal initial treatment for all injured parties. On the other hand, judges can adjust awards to the specific case, even though their initial evaluations are based on predetermined and standardized criteria. In this way, judges can comply with the fundamental principal according to which courts are obliged to take into due consideration the individual circumstances of each single case. Therefore, even if judges can determine the compensation based on reference values, they retain the possibility to adjust the award to the actual severity of the impairment suffered by victims.

Table 3.1: Example of a Milan Schedule

			Age						
			1	2	3	4	5	6	7
			Age Index						
		Point value	1.000	0.995	0.990	0.985	0.980	0.975	0.970
	10%	2,598	25,979	25,849	25,720	25,590	25,460	25,330	25,200
	11%	2,739	30,129	29,978	29,828	29,677	29,527	229,376	29,225
	12%	2,881	34,573	34,400	34,227	34,055	33,882	33,709	33,536
	13%	3,026	39,337	39,141	38,944	38,747	38,551	38,354	38,157
	14%	3.172	44,405	44,183	43,961	43,739	43,517	43,295	43,073
	15%	3,320	49,807	49,558	49,309	49,060	48,811	48,562	48,313
Disability	16%	3,470	55,522	55,244	54,966	54,689	54,411	54,134	53,856
	17%	3,622	61,583	61,275	60,967	60,659	60,351	60,044	59,736
	18%	3,776	67,967	67,627	67,287	66,947	66,608	66,268	65,928
	19%	3,932	74,711	74,338	73,964	73,590	73,217	72,843	72,470
	20%	4,089	81,787	81,378	80,969	80,560	80,151	79,742	79,333

Notes: Values are expressed in 2011 euros and taken from the reference table adopted by the Court of Milan in 2011. In the case of a 10% disability suffered by a 3 years old victim, the reference compensation amounts to 25,720 euros. This figure is obtained by multiplying the monetary percentage point value (2,598 euros) by ten by the age index (0.990).

Following the example of the court of Pisa, other Italian courts started to develop their own local schedule.[78] Among them, the court of Milan is the one that has gained the greater consensus by proposing a further mechanism of calculation. Specifically, the Milan calculating

[77] Constitutional Court, 11 April 1997, n.3170; and Constitutional Court, 14 July 1986, n. 184. Even the Court of Cassation favorably received the Pisan evaluation by points in its decision, 13 April 1995, n. 4255.

[78] Negro (2011a).

method differs from the evaluation by point of the court of Pisa, because the monetary value is no longer constant, but it varies according to the severity of the harm suffered and the age of the injured party. In practice, this mechanism foresees the simultaneous application of two criteria: (i) a progressive criterion for the determination of the monetary point values assigned to the disability percentages; and (ii) a regressive criterion with respect to the age of the injured party. According to the first criterion, the monetary value varies unevenly and more rapidly with the increasing severity of injuries, so that the greater is the harm suffered by a victim (i.e. the percentage point of disability), the higher is the monetary value. Differently, the regressive criterion reflects the fact that, considering the average possible lifetime of a person, a victim, who has been harmed at a younger age, would bear the consequences of the physical impairment for a longer period than an older victim would (Table 3.1).[79] Thereby, the Milan calculating method turned out to be even more flexible than the method of the Court of Pisa. The monetary point values are no longer determined as the average of previous similar compensations, rather as a function of these awards.[80]

The Court of Cassation did not only recognize the validity of the Milan schedule as it did with respect to that of Pisa, but it has also pointed out the great effectiveness of the Milan method in avoiding unequal treatment of victims and increasing the predictability of sentences.[81] As a result, the Milan table, developed for the first time in 1995, was soon taken as main reference by other courts to the extent that nowadays it has become the most widely used mechanism for the assessment of noneconomic damages by the Italian courts.[82] Moreover, the Milan schedule is likely to be adopted by the entire national judicial system since the Italian Supreme Court, in its recent sentence 12408/2011, has publicly recognized the Milan calculating method as the basic criterion to assess non-pecuniary damages to health.[83]

[79]See, De Paola G. and L. Avigliano (2009).

[80]Specifically, as well explained by Rossetti (2009), it is necessary to first determine an initial monetary value. This value is computed as the average of the previous awards granted by the court adopting the schedule. In this way, if during the time frame chosen as the reference period the court has awarded: 150 euros for a 5% disability, 400 euros for a 25% disability and 3,000 euros for a 50% disability, the initial monetary value is given by the ratio between the sum of these awards and the sum of the related points of disability (i.e. 3,550/80). Hence, it would be equal to 44.375. Once the initial monetary valued is set, this has to vary following a geometric growth function taken from forensic medicine according to which the suffering derived from personal injuries increases geometrically with increasing degree of disability. As a result, an injured party who has suffered a 30% disability, should have experienced pain and suffering more than double compared to a victim who suffered a 15% disability.

[81]Court of Cassation, 25 May 2000, n. 748.

[82]In any case, it should not be forgotten that regardless of the assessment method chosen by courts, judges are not bound to the application of such a mechanism. They can decide to follow other criteria, but this discretionary power implies the strict obligation to justify their choice. Furthermore, in doing so, judges have always to remember that the overall goal is to standardize as much as possible the assessment of this title of damages to the average of the previous cases (Court of Cassation, 24 May 2001, n.7048; Court of Cassation, 8 May 2001, n. 6396; Court of Cassation, 6 November 2000, n. 14440; Court of Cassation, 11 August 2000, n. 10725; and Court of Cassation, 19 May 1999, n. 4852).

[83]See, Negro (2011b).

3.6 Expected Effects and Background Literature

The aim of this Section is to summarize the available evidence about the likely outcomes of limiting noneconomic damages while discussing some of the most relevant empirical studies on the matter.

There is an extensive literature devoted to the assessment of the impact of capping noneconomic damages, on a number of different outcomes. In particular, the empirical research has focused on the implications in terms of lawsuit frequency, claim severity, defensive medicine, insurance premiums and insurance profitability. However, the findings obtained have not always pointed in the same direction due to the complexity of the issue investigated, the design of the analysis performed or the specific characteristic of the data employed.

In addition, empirical studies on the likely effects of limiting noneconomic losses have been mainly devoted to the analysis of the introduction of caps (i.e. flat or tiered caps). Traditionally, the main case study is the U.S. experience that so far has only considered and implemented flat or tiered caps, even though an extensive body of literature has invoked the introduction of noneconomic damages schedules precisely in relation to malpractice litigation.[84] As a result, the potential consequences of scheduling noneconomic losses are primarily attained on a theoretical basis by looking at the evidence provided with respect to caps and at the potential similarities with them.

3.6.1 Claim Severity

One of the main target of interest has been the relationship between ceilings on noneconomic compensations and the magnitude of medical malpractice awards received by plaintiffs. There is a strong evidence supporting the conclusion that capping non-pecuniary losses significantly influences claims' payouts. Most of the studies waive in favor of a negative impact of noneconomic damages caps on victims' recoveries that on average experience a decline in the range of 20 to 30%.[85] For instance, a 1986 study by Danzon, that investigates medical malpractice claims between 1975 and 1984, concludes that the imposition of limits on damages makes plaintiffs' recovery drop by 23%.[86] Sloan et al. (1989) offer additional evidence. The authors evaluate the impact of tort reforms on medical malpractice payments, the probability that a trial would result in a payment, and the speed with which litigation was closed. Based on pooled cross-sectional data on closed claims between 1975 and 1978, and in 1984, and on an individual-level analysis, the authors conclude that capping noneconomic damages lowers compensations by 31%, while overall damages ceilings reduce awards by 38%.

Similarly, Yoon (2001) investigates the impact of the implementation and repeal of caps on damages in Alabama between 1987 and 1999 on victims' recoveries in medical malprac-

[84] See, for instance, Shapiro and Rodriguez (2009), Comandè (2005), Mello and Kachalia (2010), Studdert et al. (2011), Studdert et al. (2005), Avraham (2006), Sugarman (2006).

[85] See Table 3.2 in the Appendix for an overview of the empirical studies on the impact of caps on claim severity.

[86] Danzon (1986) does not differ between caps on noneconomic losses and caps on total compensatory losses, omitting to investigate the different impacts.

tice litigation. The author uses a Difference-in-Differences approach to compare the awards victims obtained in individual claims against physicians covered by a single large insurer operating in Alabama to those of a control group. This control group includes all the medical malpractice trials in which plaintiffs have sued physicians insured by the same insurance company in the neighboring states of Tennessee, Arkansas, and Mississippi, where there were no damages ceilings. The analysis shows that the enactment of caps leads to a decrease of the awards granted to plaintiffs by roughly $20,000, while the nullification of such limits results in almost a doubling of these compensations. More recently, based on claim-level data on malpractice cases for the period 1988-2004, Hyman et al. (2009) simulate the impact of Texas' 2003 cap on non-monetary losses on jury verdicts and post-verdict payouts. The Texas' ceiling results in a 73% and 27% reduction in allowed noneconomic damages and payouts respectively and in affecting differently different groups of plaintiffs, with greater effects on unemployed, deceased and elderly victims.[87]

In contrast to other studies, Shakey (2005) examines the effect of capping noneconomic damages and suggests that limiting non-pecuniary losses has no statistically significant effects on the final amount of the overall compensation. Specifically, using data on court judgments collected by the National Center for State Courts for the years 1992, 1996 and 2001, the author investigates the unintended effects that may weaken the expected impacts of caps on pain and suffering. Sharkey explains this result by pointing out the existence of a possible crossover effect that may mitigate the impact of caps. Specifically, the imposition of ceilings on noneconomic damages would drive victims' attorneys to reconsider the economic and noneconomic components of the total amount requested as compensation, thus they would ask for larger economic damages keeping the total damages recovery unchanged. At the same time, juries would be willing to award higher pecuniary losses, because they may have in mind a figure of the amount of money the victim should obtain. In addition, juries may often have a less strict view of the distinction between economic and noneconomic damages than the one offered by the law.

As to the specific relationship between noneconomic damages schedules and claims' payouts, past research is more limited and the main contribution in this respect comes from experimental economics. Saks et al. (1997) suggest that the introduction of noneconomic damages schedules increases the consistency of personal injury awards and that this type of damages limitation is a more effective tool to solve the problem of the undesired variability of compensations than flat or tiered caps.

3.6.2 Claim Frequency

A number of studies have specifically investigated the implications of limiting noneconomic damages on the frequency of lawsuits, but with mixed results. Browne and Puelz (1999)

[87]Hyman et al. (2009) also investigate the effect of the Texas' 2003 cap on settlements, finding that payouts decrease by 18%. Previously, Avraham (2007) also suggested a negative relation between capping damages for pain and suffering and settlement payouts. Using medical malpractice data from the National Practitioner Data Bank (NPDB) for the period 1991-1998, the author shows that this tort reform reduces average value of awards by 15-20%.

explore the effects of tort reforms on claim frequency and claim severity with respect to both economic and noneconomic damages in case of automobile incidents. The authors show that caps on noneconomic damages lead to a reduction in the average value of the awards and, at the same time, to a decline in the average likelihood of filing a claim. Avraham (2007) has later confirmed the results of Browne and Puelz with specific reference to medical malpractice litigation. Applying a Difference-in-Differences approach, the author conducts an individual-level analysis[88] by studying more than 100,000 case outcomes from 50 states in the period 1991-1998 and suggests the existence of a negative relationship between caps on noneconomic damages and both the average awards and the number of claims per 1,000 physicians. Yet, these findings move away from those of other four influential studies.[89] Specifically, Danzon (1984, 1986) and Donohue III and Ho (2007) exclude the impact of noneconomic damages caps on claim frequency, while Durance even suggests the existence of a positive relationship. In particular, Durance (2009) uses a dataset consisting of all medical malpractice claims with a positive payout that are contained in the NPDB to assess the effect of non-monetary losses on both the frequency and severity of claims. By applying ordinary least squares (OLS) estimation and by introducing an instrumental variable reflecting the state political composition, the author accounts for the potential endogeneity of ceilings on non-pecuniary losses and reaches the conclusions that this type of caps may not lower the frequency of lawsuits.[90]

In wider terms, the mixed findings offered by empirical research reflect a fundamental theoretical ambiguity that holds also in relation to damages schedules. Indeed, limiting noneconomic losses compensations may have conflicting consequences on doctors and injured parties. Lower damages may weaken the malpractice pressure perceived by physicians. In response to this perception, doctors may reduce their actual level of precaution potentially increasing malpractice litigation. At the same time, the decrease in the potential amount of money obtainable in a claim due to caps or schedules may reduce the chance that patients would decide to file a claim, especially in a contingent-fee system.[91] Consequently, neither the theory nor the empirical evidence enable us to draw an unambiguous conclusion about how limiting noneconomic damages influences claim frequency.

3.6.3 Insurance Premiums

The relationship between caps and malpractice insurance rates has been the subject of an extensive analysis. Even though the findings obtained do not always coincide, the overall

[88] In particular, the advantage of using individual-level data lies in the fact that "*precise matching of individual cases to applicable law is more accurately accomplished using individual-level data for those cases that were resolved after a reform was struck down. Therefore, the effect of a reform on case outcomes can be accurately estimated.*" See, Avraham (2007), p. 208.

[89] Danzon (1984), Danzon (1986), Donohue and Ho (2007), and Durance (2009).

[90] See Table 3.3 in the Appendix for additional results.

[91] Donohue III and Ho (2007), p. 71. In addition, precisely with respect to their findings, Donohue III and Ho suggest "*Null findings on claim rates are consistent both with (1) no effects on physicians and no effects on litigants, or (2) cross-cutting effects of equal magnitude (large or small) on both. Isolating physician and litigant effects in light of these dual effects remains a major challenge in the medical malpractice literature.*"

evidence weighs in favor of the conclusion that limiting pain and suffering awards lowers medical liability premiums.[92] Zuckerman et al. (1990), for instance, analyze state-level data on doctors' premiums, claims and awards provided by a Health Care Financing Administration Survey of Insurers for the period 1974-1986 to assess the effects of different tort reforms on premiums. This analysis uses a state fixed-effects model with lagged premiums and a time trend control accounting for variations among states and over time. As a result, the authors find that imposing ceilings on the liability of physicians leads to a decrease in premiums for general surgeons, general practitioners, and obstetricians and gynecologists on average by 14% in the short-run, whereas this reduction exceeds 40% in the long-run. Notwithstanding, Zuckerman et al. (1990) are not able to identify and disentangle the effects that caps on non-monetary losses and caps on doctors' liability have on premiums. Moreover, the data used displays important limitations due to the use of information on average premium rates per doctor. In addition, the specific period under study may not be long enough to appreciate the impact of tort reforms enacted in the mid-Eighties. More recently, Danzon et al. (2004) find that ceilings on non-pecuniary losses of $500,000 or less lead to a significant decline in premium by 5.7%, while if noneconomic damages caps are set to a higher level or overall damages caps are implemented, there is no effect. In their state-level investigation of premium changes, the authors estimate a state and year fixed effects-model using ordinary least squares and introduce three indicator variables for three different types of caps: (i) noneconomic damages caps equal to or smaller than $500,000; (ii) caps greater than $500,000; and (iii) a limit on total compensatory damages. Kilgore et al. (2006) use a full state and year fixed-effects model to control for unobserved elements that may influence malpractice premiums in different states and times and may be uncorrelated to variations in tort law. Specifically, the authors apply a multivariate regression approach to explore the effects of different tort law reforms, including caps, on the insurance premiums for physician professional liability from 1991 to 2004. The study demonstrates that on average, the states limiting noneconomic losses report lower malpractice premiums for internal medicine, general surgery and obstetrics/gynecology by 17.3%, 20.7% and 25.5%, respectively.[93]

Two subsequent studies by Viscusi and Born provide further evidence supporting the association of noneconomic damages caps with lower insurance premiums. These studies also look at the implications of damages caps on the more general insurance profitability and they suggest that the enactment of these policy interventions also leads to a decline in insurers' losses by reducing the compensations awarded to medical malpractice victims. Specifically,

[92] See Table 4.13 in the Appendix for an overview of the previous empirical research studying the relation between capping damages for pain and suffering and insurance premiums. For a detailed and comprehensive discussion of the empirical methodologies employed by these studies to assess the relationship between damages caps and medical malpractice insurance premiums, see Zeiler and Hardcastle (2012).

[93] In their analysis, Kilgore et al. (2006) specify damages caps in two different ways: i) through a variable expressing the imposition of a ceiling on damages in each state and year and a continuous measure of the level at which these ceilings are set; and ii) through dichotomous indicator variables for the presence of a cap smaller than, or equal to, $250,000; a cap between $250,000 and $500,000; a cap between $500,000 and $750,000, and a cap exceeding $750,000. The authors perform some simulations, finding that a $100,000 reduction of caps results in a 4% drop of premiums and the adoption of a $250,000 cap by all states would result in a saving of 8% on the current premiums.

Viscusi and Born (1995) use National Association of Insurance Commissioner (NAIC) data to study the impact of caps on malpractice premium income and incurred losses over the 1985-1991 period. By employing a state and year fixed-effects model, the authors find that, in the states implementing caps, the aggregate premiums of each insurance company decrease by 12.4%. More recently, Viscusi and Born (2005) rely on the same dataset and integrate it with more specific and detailed information about the tort liability reforms enacted by the states. The authors perform a quantile regression analysis of insurers' losses and, similarly to their previous findings, conclude that limiting noneconomic damages lowers insurers' losses and premium income by 17% and 6% respectively.

More recently, Grace and Leverty (2012) confirm the negative relation between caps on non-pecuniary damages and malpractice insurance premiums. However, the authors point out that previous empirical studies significantly misestimate the magnitude of the impact of caps, because they fail in distinguishing between permanent and temporary ceilings. Specifically, Grace and Leverty (2012) perform an ordinary least squares estimation with state and year fixed-effects on premiums data from NAIC and tort reforms information from the Database of State Tort Law Reforms (DSTLR). The findings obtained report a 7.6% reduction in malpractice premiums when temporary and permanent caps are not discerned. Differently, this reduction amounts to 13% considering only permanent ceilings on non-monetary losses, while there is no statistically significant results in relation to sole temporary caps.

Noneconomic damages schedules are expected to have effects similar to those of caps. Specifically, scheduling noneconomic losses should decrease the variability in compensations. Furthermore, this reduction is likely to be greater than in the case of caps, because schedules provide more detailed information on the potential payouts for different kinds of health impairments. Consequently, the greater predictability of victims' awards would enable insurers to better predict their risk exposure and, subsequently, to lower insurance rates.[94]

3.6.4 Insurance Profitability

Past research on the impact of noneconomic damages caps on the performance of the malpractice insurance market has mainly focused on short-term effects represented by the impact of caps on insurers' losses and loss ratio[95], detecting a negative relationship between caps and these outcome variables.[96] For instance, Barker (1992) applies a cross-sectional analysis using annual loss ratio data by state for the 1977-1986 period suggesting that capping damages reduces underwriting risk[97] and enhances insurance profitability. According to the author, caps determine a reduction in the severity of claims which results in an improvement of the

[94] See, Blumstein (2005), Studdert and Mello (2005), Mello and Kachalia (2010).

[95] Loss ratio is defined as the ratio of incurred losses to earned premiums (Barker (1992), p. 145).

[96] Another strand of the literature uses insurers' closed claims data to assess the impact of noneconomic damages caps on market performance. See, for instance, Danzon (1984, 1986), Zuckerman et al. (1990), Yoon (2001). In particular, these studies provide evidence that caps decrease the mean payments in malpractice litigation and suggest that this reduction should then manifest in a decrease of insurers' losses.

[97] Underwriting risk reflects the probability that the actual losses of an insurance company differ from the expected losses. See, Barker (1992), p. 145.

performance of the malpractice insurance market, because they make it easier for insurers to appraise the costs of future claims.[98]

However, to have a more accurate understanding of how limiting noneconomic damages influences insurance losses, it is necessary to assess the long-term effects of these policy interventions. This is a complex task since it takes several years to appreciate the effect on insurers' payouts, resulting from the enactment of a tort reform, thus to have data on the actual payments received by plaintiffs. Born et al.(2009) overcome this problem by evaluating the impact of tort reforms not just on the incurred losses reported by insurers, rather on their actual losses, that is, the aggregated amounts received by victims.[99] To this end, the authors analyze the annual financial data submitted by insurance companies to the NAIC between 1984 and 2003 and apply a quantile regression based on the distribution of the losses of the insurance companies. This study reinforces the results of previous research on the negative relationship between capping damages and incurred losses. In addition, it demonstrates that the introduction of caps on noneconomic damages affects insurers' losses even more heavily than insurance companies would expect. In fact, the effects on incurred losses turned out to be smaller than those on ultimate losses. The same source of data has been used by Thorpe (2004) to assess the effects of tort reforms on aggregate premium income at the state level from 1985 to 2001. This study has the additional merit of extending the analysis also to the aggregate premium revenues per physician and controlling for several state characteristics, such as the level of concentration of the reference market in each state and the number of medical practitioners. Thorpe concludes that caps on noneconomic damages imply both lower loss ratios and lower premium revenues for insurance companies. Specifically, a reduction of premium income between 13 and 17% is associated with caps on non-pecuniary damages.[100]

Aside from investigating the effect of permanent and temporary noneconomic damages caps on malpractice premiums, Grace and Leverty (2012) also examine the possible effects of these tort reforms on both insurance losses and profitability. Again, they confirm the general findings of previous studies, but the authors also show that the examination of "*the effect of a current law without accounting for its future treatment produces misleading results.*"[101] In particular, the combined effect of permanent and temporary caps reduces insurance losses and profitability by 15.5% and 13% respectively. By contrast, the temporary ceilings alone do not exert any statistically significant effect on both the outcome variables, whereas permanent caps lead to a 26% decrease in insurance losses and a 21% decrease in insurance profitability.

Much less attention has been devoted to the competition among market players to the extent that the potential consequences of capping damages for pain and suffering on insurers' competition has been substantially disregarded. In particular, the existing empirical research

[98]See, also, Viscusi et al. (1993), and Born and Viscusi (1998).

[99]However, while information on incurred losses is available at the state level, the data on ultimate losses is available at the national level. To use this national data in their analysis, Born et al. (2009) quantify the share of nationwide premiums of each insurance company by state and then study the relation between this share and the amounts actually paid out to victims.

[100]See Table 3.5 in the Appendix for additional empirical studies on the effects of damages caps on insurance profitability.

[101]Grace and Leverty (2012), p. 1.

has regarded insurers' competition solely as an additional factor, aside from damages caps, capable of exerting an influence on insurance premiums and profitability. Hence, the degree of competition among insurance companies has been included as an additional control in the empirical strategy or has been observed separately from the empirical analysis on the impact of caps and used to discuss the findings obtained. Moreover, the outcomes attained with respect to the level of competition driven by reforms related to caps is not straightforward.

As a matter of fact, Kessler (2006) argues that the behavior of insurers does not affect the rising trend of medical malpractice premiums. By performing some simple statistics on data from the NAIC, the author finds that over a twelve year period the competition in the medical professional liability insurance market has become fiercer. Hence, the contemporary increase in premiums could not be explained by an anticompetitive behavior of firms. Kessler also supports his conclusion by highlighting the conflicting findings provided by the most recent studies on the matter: Viscusi and Born (2005) and Thorpe (2004). The author highlights the ambiguity of the results obtained by these two studies to conclude that there is no sound empirical evidence of the existence and nature of a relationship between the competitive behavior of firms and malpractice insurance rates, thus Kessler suggests that it is more likely that there is no relation at all. Specifically, Viscusi and Born (2005) argue that a decrease in the level of competition in the reference market triggers a decrease in the premiums paid.[102] On the contrary, Thorpe (2004) reaches the opposite conclusion identifying in the weakening of the competition among insurance companies one of the determinants of the increase in premiums. In fact, besides showing that damages caps are associated with lower insurance premiums, Thorpe suggests that a decrease of competition represented by a 10% reduction of the HHI[103] is associated with a 2% increase in premiums.

3.6.5 Defensive Medicine

The empirical investigation of the possible effects of capping damages for pain and suffering on the behavior of doctors, that is, on the use of defensive medical practices, has again produced contrasting findings. Nonetheless, the majority of the studies support the existence of a relation between the implementation of caps and the defensive conduct of physicians at least in relation to some healthcare treatments and/or procedures.

Kessler and McClellan were the first to exploit variations in tort reforms across states and over time to determine the impact of malpractice pressure.[104] Especially, in their seminal work, Kessler and McClellan (1996) provide evidence that 'direct' tort reforms[105] impact on

[102] Viscusi and Born (2005) use, as indicator of insurers' competitive behavior, the loss ratio of these firms, which offers an inverse measure of their profitability.

[103] Herfindahl-Hirschman Index is a common measure of market concentration and is calculated by summing up the square of the market share of each firm competing in the market.

[104] Previous works used to express malpractice pressure through medical liability premiums, the frequency of claims and the severity of payouts using data on a single state and for a limited period of observation. See, for instance, Localito et al. (1993) and Baldwing et al. (1995). However, as discussed by Kessler (2011), medical liability in a state in a given period tends not to vary, thus differences in malpractice pressure may be the result of unobserved factors associated with the costs and outcomes of medical care.

[105] Kessler and McClellan define direct reforms as those tort liability reforms that directly reduce malpractice

treatment levels due to the fact that these legal interventions imply a variation in the risk for physicians of being involved in a malpractice claim. The authors use Medicare data on elderly patients who were treated for an acute myocardial infarction or an ischemic heart disease in the years 1984, 1987 and 1990 and a panel of state tort legislations. They conclude that tort reforms relaxing the liability constraints faced by physicians (e.g. damages caps) are associated with a decline of 5% to 9% in hospitals' expenditures for heart treatments. At the same time, this reduction was not associated with significant variations in health outcomes, that is, it only negligibly affected mortality and the number of medical complications. Considering this last aspect, the authors conclude that hospitals bore unnecessary costs for heart treatments and that these costs were the result of physicians practicing defensive medicine. Consequently, by reducing hospital expenditure, direct tort reforms ultimately lead to a decrease in the use of defensive practices.

In two subsequent studies, Kessler and McClellan (2002a, 2002b) investigate the process, whereby tort reforms exert their influence on the behavior of physicians. In particular, using data on malpractice claims from the Physician Insurance Association of America (PIAA) for the 1984-1994 period, Kessler and McClellan (2002a) discover that these legal changes affect doctors' decisions mainly due to their impact on claim frequency and compensations awarded.[106] By limiting both claim frequency and cost, tort reforms reduced treatments' intensity without any substantial change in health outcomes. From this, the authors infer that healthcare providers adopt defensive medical practices.

Several studies have reached opposite conclusions. For instance, Dhankhar et al. (2007) use data from the NPDB merged with Nationwide Inpatient Sample (NIS) information for the year 2002. The authors apply a multinomial logit model to investigate the impact of medical liability pressure on the procedure utilization to treat patients with acute myocardial infarction. Their analysis reports that a higher malpractice pressure is associated with a decline in resource utilization and with better health outcomes at least for patients with less serious clinical conditions. Differently, Sloan and Shadle (2009) report no evidence of an impact of liability reforms on doctors' behavior and clinical outcomes. Combining data from the National Long-Term Care Survey and Medicare claims for the period 1985-2000, they report that the enactment of direct or indirect reforms does not lead to a reduction in Medicare payments and, at the same time, has no impact on patient outcomes.

A vast part of the literature on defensive medicine has focused its attention on the conduct of physicians in obstetrics. This is due to the fact that obstetrics is believed to be one of the clinical areas where malpractice pressure is more acutely perceived by doctors, who therefore are expected to be more responsive to variations in malpractice liability.[107] In addition, the utilization rate of cesarean delivery is usually a well designed case study since it has in vaginal

pressure. Consequently, as direct tort reforms, the authors include in their analysis: damage caps, the abolition of punitive damages, collateral-source-rule reform, and the abolition of mandatory pre-judgment interest (Kessler and McClellan, 1996, p. 371).

[106]Based on Medicare claims data on elderly patients with heart diseases between 1984 and 1994, Kessler and McClellan (2002b) observe that tort reforms weakening medial liability negatively affect the defensive behavior of doctors in contexts with low and high managed care enrollment.

[107]Mello and Kachalia (2012).

delivery its natural counter-factual. This allows to study how physicians react to changes in malpractice pressure by comparing the use of two substitutive procedures entailing different malpractice risks. Nevertheless, mixed findings have been reached also with respect to the obstetrical practice.

Following Kessler and McClellan (1996), Esposto (2012) provides evidence of defensive practices in obstetrics. The author analyzes the impact of state liability reforms on the utilization of C-sections in the U.S. for the years 1987, 1990 and 1993. Applying a two-step instrumental variable approach, Esposto shows that the cesarean rate is lower in those states where the implemented tort reforms have relaxed the malpractice pressure by reducing the probability of being involved in a suit. Similarly, Yang et al. (2009) observe a negative relationship between the use of C-section and caps on noneconomic damages.[108] Specifically, a cap equal or less than $250,000 leads to a 3.68% reduction in the use of primary cesarean deliveries and to a 1.5% reduction in the total use of cesarean deliveries. However, different results have been obtained, for instance, by Kim (2006), who suggests that malpractice risk does not affect the use of cesarean sections.[109] On the contrary, relying on data from the Vital Statistics Natality files for the period 1989-2001, Currie and MacLeod (2008) apply a standard panel data approach with county-fixed effects demonstrating that the implementation of laws capping noneconomic damages determines a 5% increase in the probability of cesarean sections.[110] More recently, Cuddy (2012) has confirmed the results obtained by Currie and MacLeod also with respect to oncology, showing that ceilings on noneconomic damages intensify the use of both diagnostic and therapeutic procedures. Specifically, the author adopts a Differences-in-Differences approach, while controlling for both national trends and per-existing state differences, and examines state-level data from the Behavioral Risk Factor Surveillance System (BRFSS) and the Surveillance Epidemiology and End Results (SEER) Program.

Frakes (2012) extends the work of Currie and MacLeod (2008), reaching similar conclusions with respect to cesarean deliveries. In order to overcome the potential problems that

[108] Yang et al. (2009) apply a mixed-effects model to analyze a panel dataset for the 1991-2003 period, which consists of data on births in the U.S. from the Natality Detail File (NDF) and data on liability insurance premiums for obstetricians from the Medical Liability Monitor Annual Rate Survey.

[109] Kim (2006) adopts an instrumental variable identification strategy and uses two different measures of malpractice risk: (i) the number of gynecology and obstetrics suits per 1,000 newborns for each state during the last three years, or (ii) the amount of gynecology and obstetrics payouts for each state during the last thee years. As for the data employed, the author relies on information on malpractice claims from the NPDB and information on births from the NDF for a 15-year period (1990-2005).

[110] In particular, Currie and MacLeod (2008) explain their finding of a positive relationship between damages caps and the utilization rate of C-section by analyzing the risks entailed by both vaginal and cesarean delivery. Specifically, the authors point out that vaginal delivery implies significant risks, that may make preferable a cesarean section. Nevertheless, if the choice between vaginal and cesarean delivery is not straightforward due to the conditions of the patient, it may be that the risks entailed by a cesarean section exceed those of a vaginal delivery. As a result, this consideration may prevent the doctor from opting for a cesarean delivery due to the physician's malpractice fear of improperly performing a cesarean section on this marginal patient. Accordingly, a slackening of malpractice pressure through ceilings on non-pecuniary losses may induce the doctor to opt for riskier procedures.

arise from the limited number of years previously investigated,[111] the author considers a 27-year period (1979-2005), finding no evidence that an increase in liability leads to a greater utilization of cesarean sections.[112] On the contrary, the authors provide further evidence of a positive relationship between noneconomic damages caps and cesarean utilization. In particular, Frakes suggests that with respect to C-sections "*the risk associated with the procedure may be high enough and the medical circumstances of the marginal cesarean mother may be minor enough that the balance of risks may not tip strongly in the direction of positive defensive medicine.*"[113]

Despite some contrasting results, the overall evidence provided by the empirical studies on the relationship between caps on non-pecuniary losses and defensive medicine, seems to confirm that the decisions of clinicians are to some extent influenced by those tort reforms capable of weakening the malpractice risk perceived by the physicians themselves. Following this reasoning, one can expect to observe an analogous effect in the case of the implementation of schedules. In fact, as pointed out by Mello and Kachalia (2010), if physicians are able to estimate with higher confidence the possible consequences of malpractice thanks to the introduction of damages schedules, they should resort to defensive practices less frequently.[114] "*However, if what providers fear is the psychological and reputational costs of being sued, rather than the economic sanction of the ultimate payout on the claim, then the effect of scheduling on defensive medicine may be rather slight.*"[115]

[111]In particular, the sample period considered by Currie and MacLeod(2008) poses some concerns for two main reasons. First, two out of the four states, that have actually introduced laws capping noneconomic awards between 1989 and 2001, have then repealed them within several years. Second, the specification applied also considers the limits on non-pecuniary losses of four other states, where caps were implemented and invalidated before 1989. As pointed out by Frakes (2012), the inclusion of these states in the analysis does not consider the possibility that obstetricians are less responsive to tort reforms when there is a high likelihood that these legislations may be annulled. Nevertheless, the exclusion of these states would undermine the consistency of the findings given that only two states would be left for the analysis.

[112]Specifically, Frakes (2012) combines data on the behavior of doctors from the National Hospital Discharge Surveys for the period 1979-2005 with geographic identifier from the National Center for Health Statistics and data on states' tort legislation from the Database of State Tort Law Reform by Ronen Avraham. In this way, Frakes considers the entire decade of the 80's, the period of most intense adoption of caps on noneconomic damages. In addition, besides a basic Difference-in-Differences model, the author integrates the analysis with further specifications that include a number of individual and state-year characteristics. Furthermore, he takes into account the possibility that the behavior of obstetricians will be less affected by tort reforms in those states where caps are very likely to be invalidated or repealed. In fact, Frakes applies a final more restricted specification by dropping the eight states that invalidated the previously-implemented ceilings on non-pecuniary losses at some point over the observation period.

[113]Frakes (2012), p. 27.

[114]See also Bovbjerg et al. (1989).

[115]Mello and Kachalia (2010), p. 27.

3.7 Conclusive Remarks

A legislative intervention aimed at limiting noneconomic damages has been invoked and identified as an effective policy tool to deal with the distresses of the malpractice insurance market. Traditionally, insurers describe this market as being not profitable enough or too volatile and unpredictable. In particular, insurance companies would not be able to produce accurate and reliable estimates on the payouts of claims and to assess their risk exposure due to the high variability and uncertainty of compensations. Aspects that, therefore, would make it even more problematic for firms to operate in the reference market.

The main cause of high variability and uncertainty of personal injury compensations has been primarily recognized in the controversial nature of their noneconomic component and in the subsequent difficulty in quantifying it. Difficulty that is exacerbated by the lack of a coherent and common framework for the evaluation of this title of damages. Without proper guidance, the discretion of juries and judges in assessing victims' recoveries has generally resulted in a large variance of awards, fostering the perception of a high degree of arbitrariness.

The basic intuition at the basis of this legislative intervention is that rationalizing non-pecuniary losses would increase the predictability of personal injury compensations. By limiting the compensation that can be granted to injured parties, caps are expected to decrease the heterogeneity of victims' recoveries and, therefore, to lower the uncertainty and variability of malpractice awards. The imposition of a bound on payouts also means restricting the discretion of juries and judges limiting to some extent to the possibility of adjusting the compensations to the specific circumstances of the case considered. Hence, the implementation of this tort reform implies a trade-off between more predictability of awards and less flexibility of the system. In particular, the social costs entailed by the implementation of caps can be outweighed by the positive consequences produced by a greater coverage of the malpractice insurance market.

However, the actual result of limiting damages for pain and suffering largely depends on the type of mechanism adopted. Whilst flat or tiered caps (i.e. a system of flat ceilings) assure a decrease in the number and value of very large awards, they fail to provide guidance for the quantification of compensations below the ceiling itself. Consequently, the discretionary power of juries and judges in deciding the awards within the range is not modified and the related problem of payouts' variance below the threshold persists. At the same time, flat and tiered caps entail only a slight improvement in terms of horizontal equity (i.e. similar compensation for similar injuries), which increases only in relation to the more severe injuries. In addition, they are also expected to produce poor results in terms of vertical equity (i.e. higher compensations for more severe injuries) since they reduce the room for differentiating compensations in the case of the more serious health impairments. Differently, damages schedules ensure the restraint of awards outliers, while enhancing both horizontal and vertical equity. Their tiering structure insures that similar injuries belonging to a same group receive similar compensations and that tiers are ranked according to the increasing severity of injuries, so that tiers associated with higher health impairments receive higher awards. Furthermore, schedules provide juries and judges with reference compensations, thus they succeed in dealing with the problem of very large recoveries while reducing the arbi-

trariness of the assessment process. Scheduling constitutes a more sophisticated and sensitive approach for the evaluation of non-pecuniary losses and a better institutional instrument to face malpractice crises. In fact, compared to caps, scheduled damages are a more effective tool to increase the predictability of compensations, thus to increase the stability of the malpractice insurance market as well as the willingness of insurance companies to offer coverage against medical professional liability.

Previous empirical research provides interesting evidence on the effect of noneconomic damages caps. Specifically, even though the findings obtained are often mixed, a set of well-designed studies suggests that caps (i.e. flat or tiered) succeed in decreasing both claim severity and insurance premiums, in increasing the profitability of the medical liability insurance market and in affecting the defensive behavior of doctors. Conversely, the impact of caps on the frequency of claims remains much more controversial. As of noneconomic damages schedules, the evidence base to evaluate their impact is extremely limited to the extent that the likely effects of scheduling are mainly drawn by looking at what happens in relation to the implementation of caps. As a result, to better appreciate the actual outcomes of scheduling noneconomic damages, more specific empirical research is needed.

The purpose of the next two chapters is precisely to investigate the impact of schedules for pain and suffering on the behavior of both insurers and hospitals. In this regard, the Italian institutional framework constitutes a promising case study since noneconomic damages are limited through a heterogeneous system of schedules that is the result of a long debate and study of non-pecuniary losses. Moreover, the Italian experience is a peculiar case, because the adoption of schedules depended on the discretionary decision of each single court and has not been driven by the specific aim of facing the problems experienced by the medical liability insurance market. The result is that this implementation took place at different points in time for the different tribunals. Even though nowadays the vast majority of Italian courts has adopted these ceilings, some still prefer to rely on purely equitable evaluations, refusing to apply any type of caps. Moreover, differently from the existing empirical literature on the effects of caps that usually makes a comparison between before and after the implementation of caps, this specific feature of the Italian context will allow us to contrast what happens under the courts introducing caps and those that do not vary their assessment process of damages for pain and suffering.

3.8 Appendix

Table 3.2: Previous Empirical Research on Claims Severity

Study	Data	Period	Caps	Outcomes	Approach
Danzon (1984)	NAIC	1975-1978	Flat on damages	Claim severity decreases on average by 19% within 2 years from caps introduction	Pooled time-series cross-section estimations
Danzon (1986)	Data on closed malpractice claims from insurance companies that had a relevant market share during the period of observation	1975-1984	Flat on damages	Plaintiffs' recoveries drop by 23%	TSLS and OLS
Sloan et al. (1989)	NAIC and GAO	1975-1978 and 1984	Flat on noneconomic damages	A 31% reduction in compensations	Individual-level analysis
Kessler and McClellan (2000)	Data from PIAA and the AMA Socioeconomic Monitoring System	1984-1994	Flat and tiered on noneconomic damages	No effect	DID with state and years-fixed effects
Yoon (2001)	Data on all claims filed by patients against physicians insured by the St. Paul Fire & Marine Insurance Company in 4 states (Alabama, Arkansas, Mississippi and Tennessee)	1987-1999	Flat on damages	Reduction in claim severity by roughly $20,000, while caps' nullification results in almost a doubling of compensations	DID

Notes: AMA=American Medical Association, DID=Difference-in-Differences Estimation, GAO=U.S. General Account Office, $NAIC$=Annual financial data submitted by insurance companies to the National Association of Insurance Commissioners, $NPDB$=Data on all medical malpractice claims with a positive payout contained in the National Practitioner Data Bank, OLS=Ordinary Least Squares Estimation, $PIAA$=Physicians Insurance Association of America, $TSLS$=Twostage Least Squares Estimation.

Table 3.2 Empirical Studies on Claims Severity (Cont'd)

Study	**Data**	**Period**	**Caps**	**Outcomes**	**Approach**
Studdert et al. (2004)	Statewide data on jury verdicts from the California Jury Verdicts Weekly	1985-2002	Flat on noneconomic damages	Noneconomic caps reduce noneconomic compensations by 73% and overall awards by 35% with a much stronger impact on more severe injuries	Multivariate linear regression analysis
Sharkey (2005)	Data on jury trial verdicts collected by the National Center for State Courts	1992, 1996 and 2001	Flat and tiered caps on noneconomic damages	No effect	Multivariate linear regression analysis
Guirguis-Blake et al. (2006)	NPDB	1999-2001	Flat and tiered caps on noneconomic damages	Reduction in the average amount per payment by 22%	Bivariate and multivariate analysis
Avraham (2007)	Individual level data on more than 100,000 medical malpractice case outcomes from 50 states	1991-1998	Flat on noneconomic damages	Reduction in the average value of awards by 15-20%	OLS with state, year and reform FE
Water et al. (2007)	NPDB	1991-2003	Flat and tiered caps on noneconomic damages	Contrary to caps on economic damages, caps on noneconomic damages lower payments per physicians and numbers of paid claims	FE multivariate regression analysis
Hyman et al. (2009)	Data from the Texas Closed Claims Database	1988-2004	Tiered on noneconomic damages	Reduction in allowed verdicts by 38% and in payouts by 27%. Noneconomic caps have a greater impact in relation to deceased, unemployed, and elderly victims	Simulation approach

Notes: AMA=American Medical Association, DID=Difference-in-Differences Estimation, FE=Fixed-effects, $NAIC$= Annual financial data submitted by insurance companies to the National Association of Insurance Commissioners, $NPDB$=Data on all medical malpractice claims with a positive payout contained in the National Practitioner Data Bank, OLS=Ordinary Least Squares Estimation, $PIAA$=Physicians Insurance Association of America $TSLS$=Two-stage Least Squares Estimation.

Table 3.3: Previous Empirical Research on Claims Frequency

Study	**Data**	**Period**	**Caps**	**Outcomes**	**Approach**
Danzon (1984)	Data on closed claims collected by NAIC through a survey	1975-1978	Damages caps	No effect	Pooled time-series cross-section estimations
Danzon (1986)	Data on closed malpractice claims from insurance companies that had a relevant market share during the period of observation	1975-1984	Flat on damages	No effect	TSLS and OLS
Browne and Puelz (1999)	Data on car accidents from the study on automobile injury closed claims done by the Insurance Research Council in 1992	1980-1992	Flat on noneconomic damages	Reduction in the average likelihood to file a claim	Breush-Pagan's (1979) Lagrange multiplier statistic
Kessler and McClellan (2000)	Data on malpractice claims from the PIAA and data on claims frequency from the AMA Socioeconomic Monitoring System	1984-1994	Flat and tiered on noneconomic damages	Noneconomic damages caps determine a 1.4 percentage-point decrease in claims rates	DID with state and year FE
Avraham (2007)	Individual level data on more than 100,000 medical malpractice case outcomes from 50 states	1991-1998	Flat on noneconomic damages	A 10-13% reduction in the number of claims per 1,000 physicians	OLS with state, year and reform FE
Donohue and Ho (2007)	NPDB	1991-2004	Flat on noneconomic damages	No effect	DID standard and DID combined with nonparametric randomization inference
Durrance (2009)	NPDB	1991-2001	Flat on noneconomic damages	Claim frequency may not be lowered	OLS combined with the introduction of an instrumental variable reflecting the state political composition

Notes: AMA=American Medical Association, FE=Fixed-effects, DID=Difference-in-Differences Estimation, $NAIC$= annual financial data submitted by insurance companies to the National Association of Insurance Commissioners, $NPDB$=Data on all medical malpractice claims with a positive payout contained in the National Practitioner Data Bank, OLS=Ordinary Least Squares Estimation, $PIAA$=Physicians Insurance Association of America, $TSLS$=Two-stage Least Squares Estimation.

Table 3.4: Previous Empirical Research on Insurance Premiums

Study	**Data**	**Period**	**Caps**	**Outcomes**	**Approach**
Sloan (1985)	Data on the premiums paid by physicians in 3 field (i.e. general practitioners, ophthalmologists and orthopedic surgeons)	1974-1978	Flat on damages	No effect	OLS
Blackmon and Zeckhauser (1990)	Best's Review	1985-1998	Flat on damages	Reduction in the short-run by 13%	OLS
Zuckerman et al. (1990)	State-level data on doctors' premiums, claims and awards provided by a Health Care Financing Administration Survey of Insurers	1974-1986	Flat on damages	Reduction in paid premiums for general surgeons, general practitioners, and obstetrics-gynecology on average by 14% in the short-run and by 40% in the long-run	State FE model with lagged premiums and a time trend control accounting for variations among states and over time
Viscusi et al. (1993)	State liability reform data from the AAI and state-level data on insurers' premiums and loss ratios from Best's Review	1985-1988	Flat and tiered on noneconomic damages	No effect	OLS with premium lagged variable
Viscusi and Born (1995)	NAIC	1985-1991	Flat on damages	Reduction in the aggregate premiums raised by insurers by 12.4%	State and year FE model
Kessler and McClellan (1997)	Self-reported data by physicians on malpractice premiums	1985-1993	Flat on damages	Reduction in premiums growth within 3 years the enactment of caps	FE model
Guis (1998)	Data on aggregate state premium revenue from Best's Review	1976-1990	Damages caps	No effect	RE model
Born and Viscusi (1998)	NAIC	1985-1991	Flat on noneconomic damages	Reduction in insurance premiums between 4 and 13%	QR

Notes: FE=Fixed-effects, MLM=Data on malpractice premiums from the Medical Liability Monitor, $NAIC$= annual financial data submitted by insurance companies to the National Association of Insurance Commissioners, $NPDB$=Data on all medical malpractice claims with a positive payout contained in the National Practitioner Data Bank, OLS=Ordinary Least Squares Estimation, QR=Quantile Regression, RE=Random-effects.

Table 4.13 Previous Empirical Research on Insurance Premiums (Cont'd)

Study	**Data**	**Period**	**Caps**	**Outcomes**	**Approach**
Danzon et al. (2004)	NAIC and MLM	1994-2002	Flat on noneconomic damages	Caps up to $500,000 decrease premiums by 5.7%, while higher caps have no effect	OLS with state and years FE and 3 indicator variables for 3 types of caps: noneconomic damages caps equal to or below $500,000; above $500,000; and a limit on total compensatory damages
Thorpe (2004)	NAIC	1985-2001	Flat on noneconomic damages	A 17.1% decrease in premiums	FE and RE models
Viscusi and Born (2005)	NAIC	1985-1991	Flat on noneconomic damages	A 6% decrease in premiums	QR
Guirguis-Blake et al. (2006)	NPDB	1999-2001	Flat and tiered caps on noneconomic damages	Flat noneconomic damages caps are associated with a reduction of premiums for obstetricians	Bivariate and multivariate analysis
Kilgore et al. (2006)	MLM	1991-2004	Flat and tiered caps on noneconomic damages	Reduction in premiums for internal medicine, general surgery and obstetrics-gynecology by 17.3%, 20.7% and 25.5%, respectively	Multivariate regression with state and year FE. Damages caps are specified: i) through a variable expressing the imposition of caps in each state and years and a continuous measure of the level at which these caps are set; and ii) through dichotomous indicator variables for the presence of a cap smaller than or equal to $250,000; between $250,000 and $500,000; between $500,000 and $750,000, and above $750,000
Grace and Leverty (2012)	NAIC and DSTLR	1985-2005	Permanent and temporary noneconomic damages caps	Noneconomic damages caps reduce premiums by 7.6%, while considering solely the permanent ones, premiums decrease by 13%	State and year FE model

Notes: $DSTLR$=data on tort reforms adoption by state from the Database of State Tort Law Reforms, FE=Fixed-effects, MLM=Data on malpractice premiums from the Medical Liability Monitor, $NAIC$= annual financial data submitted by insurance companies to the National Association of Insurance Commissioners, $NPDB$=Data on all medical malpractice claims with a positive payout contained in the National Practitioner Data Bank, OLS=Ordinary Least Squares Estimation, QR=Quantile Regression.

Table 3.5: Previous Empirical Research on Insurance Profitability

Study	**Data**	**Period**	**Caps**	**Outcomes**	**Approach**
Barker (1992)	Loss ratio annual data from the A.M. Best company for medical malpractice insurance by state and type of company group (national or state agencies and direct writers)	1977-1986	Flat caps	Reduction in the underwriting risk and increase in market profitability	Cross-sectional analysis
Viscusi et al. (1993)	State liability reform data from the AAI and state-level data on premiums and loss ratios from Best's Review	1985-1988	Flat and tiered on noneconomic damages	Reduction in insurance losses by 14.7%	OLS with premium lagged variable
Born and Viscusi (1998)	NAIC	1985-1991	Flat on noneconomic damages	Significant consistent effect in reducing loss ratios	QR
Thorpe (2004)	NAIC	1985-2001	Flat on noneconomic damages	Reduction in loss ratios by 11.7%	FE and RE models
Viscusi and Born (2005)	NAIC	1985-2001	Flat on noneconomic damages	Reduction in insurers' losses by 10-13%	QR
Born et al. (2009)	NAIC	1984-2003	Flat on noneconomic damages	Stronger negative reduction of ultimate losses than of incurred losses	QR based on the distribution of the losses of the insurance companies
Grace and Leverty (2012)	NAIC and DSTLR	1985-2005	Permanent and temporary noneconomic damages caps	Noneconomic damages caps reduce insurance losses by 15.5% and increase profitability by 13%, while considering solely the permanent ones, insurance losses decrease by 26% and profitability increases by 21%	State and year FE model

Notes: AAI=Alliance of American Insurers, $DSTLR$=data on tort reforms adoption by state from the Database of State Tort Law Reforms, FE=Fixed-effects, MLM=Data on malpractice premiums from the Medical Liability Monitor, $NAIC$=Annual financial data submitted by insurance companies to the National Association of Insurance Commissioners, $NPDB$=Data on all medical malpractice claims with a positive payout contained in the National Practitioner Data Bank, OLS=Ordinary Least Squares Estimation, QR=Quantile Regression, RE=Random-effects.

Table 3.6: Previous Empirical Research on Defensive Medicine

Study	**Data**	**Period**	**Caps**	**Outcomes**	**Approach**
Kessler and McClellan (1996)	Medicare data on elderly patients treated for serious heart diseases	1984, 1987 and 1990	Damages caps	Direct tort reforms, including caps, reduce by 5 to 9% medical expenditures with no effect on mortality and medical complications	DID
Kessler and McClellan (2002a)	Malpractice claims data from PIAA	1984-1994	Damages caps	Direct tort reforms, including caps, reduce treatment intensity with substantially no effect on health outcomes	IV
Kessler and McClellan (2002b)	Medicare data on elderly patients treated for serious heart diseases	1984-1994	Caps either on noneconomic damages or total damages	Direct tort reforms, including caps, decrease defensive medicine in areas with high and low managed care enrollment	DID
Kim (2006)	NDF and NPDB	1990-2005	The author does not directly investigate the effect of caps, but more in general of variations in malpractice risk	No effect on C-sections	IV with malpractice risk measured as: (i) the number of gynecology-obstetrics suits per 1,000 newborns during the last 3 years, or (ii) the amount of gynecology-obstetrics payouts during the last 3 years
Dhankhar et al. (2007)	NPDB and NIS	2002	The authors do not directly investigate the effect of caps, but more in general of variations in malpractice pressure	No evidence of defensive medicine	Multinomial logit model

Notes: DID=Difference-in-Differences Estimation, IV=Instrumental Variables Models, NFD=Natality Detail File, NIS=Nationwide Inpatient Sample, $NPDB$=Data on all medical malpractice claims with a positive payout contained in the National Practitioner Data Bank, $PIAA$=Physicians Insurance Association of America.

Table 3.6: Previous Empirical Research on Defensive Medicine (Cont'd)

Study	**Data**	**Period**	**Caps**	**Outcomes**	**Approach**
Currie and MacLeod (2008)	Vital Statistics	1989-2001	Noneconomic damages caps	Caps increase C-sections by 5%	Linear probability models with dummies for county, state-specific time trends, month, and year
Frakes (2012)	NHDS and NCHS and Avraham's Database of State Tort Law Reforms	1979-2005	Noneconomic damages caps	No effect on C-sections, but caps reduce the use of episiotomies during vaginal deliveries	DID
Yang et al. (2009)	NDF	1991-2003	Noneconomic damages caps	Caps are associated with lower rates of C-sections	State-level longitudinal mixed-effects regression models
Sloan and Shadle (2009)	National Long-Term Care Survey and Medicare	1985-2000	Damages caps	No effect on doctors' behavior and clinical outcomes	Two-step IV approach
Cuddy (2012)	State-level data from BRFSS and the SEER Program	1983-2000	Noneconomic damages caps	Caps increase the utilization of both diagnostic and therapeutic procedures (around 5-7%)	DID
Esposto (2012)	Rates of cesarean deliveries	1987, 1990 and 1993	Damages caps	Direct tort reforms, including caps, lower the use of C-sections	Two-step IV approach

Notes: $BRFSS$=Behavioral Risk Factor Surveillance System, DID=Difference-in-Differences Estimation, IV=Instrumental Variables Models, $NCHS$=National Center for Health Statistics, $NHDS$=National Hospital Discharge Survey, NDF=Natality Detail File, NIS=Nationwide Inpatient Sample, $NPDB$=Data on all medical malpractice claims with a positive payout contained in the National Practitioner Data Bank, $PIAA$=Physicians Insurance Association of America, $SEER$=Surveillance Epidemiology and End Results.

Chapter 4

Courts, Scheduled Damages and the Malpractice Insurance Market[1]

4.1 Introduction

As discussed in the previous chapters, liability insurance for medical malpractice has proved to be a problematic sector for insurance companies in comparison to other lines of insurance, because it entails specific problems, such as long lasting claims, significant difficulties in differentiating between high- and low-risk policyholders and high uncertainty about victims' compensations, that exacerbate the risk faced by insurers. Over time, this has resulted in two main phenomena: i) the exit from this market by some insurers,[2] and ii) a restriction of their operational area by others.[3]

Insurers justify these choices by mainly stressing the limited predictability of losses due to malpractice claims. This unpredictability combined with the fact that traditionally malpractice premiums are not experience-rated would make the assessment of risk exposure a particularly uneasy task for insurers.[4] However, the literature has provided contrasting explanations to these behaviors. A first strand of contributions highlights the lack of strong evidence to define a clear cut link between trends of malpractice claims and compensations

[1]This chapter is co-authored with Veronica Grembi.

[2]Withdrawals of commercial insurers from the market of medical liability have been regular at least in the U.S. See, Danzon (2002), Danzon et al. (2004), Mello et al. (2003), and Mello (2006b).

[3]Hereafter when we mention insurance and insurance premiums we refer to the market for medical liability insurance, unless differently stated.

[4]Premiums for medical malpractice insurance are generally not experience-rated with respect to both physicians and healthcare organizations. In particular, in the case of healthcare institutions, only a small portion, equal to 25%, of the final premium is experience-rated. See, Mello (2006b), p.1. The author also notes that "*insurers set premiums on a prospective basis based on: 1) their expected payouts for providers in a particular risk group; 2) the uncertainty surrounding this estimate; 3) their expected administrative expenses and future investment income; and 4) the profit rate they seek. They use information on past losses and expenses, combined with other information, to help them set rates.*" Since experience rating is little or not used to set premiums, insurers take into account the specialty and the geographical location with respect to doctors, and the hospital location and the services offered with respect to healthcare facilities.

and the behavior of insurers.[5] These studies tend to link the problems of affordability and availability with the fact that the malpractice insurance business periodically experiences insurance cycles common to other long-tailed lines of liability insurance.[6] Differently, a second strand of contributions focuses on the role played by damages awards emphasizing the importance of policies able to lower the level and variance of compensations.[7]

Noneconomic damages caps have received substantial attention in the literature on medical malpractice as one of the most sound policies to cope with rising premiums and malpractice costs.[8] As discussed in Chapter 3, among the different possible types of caps, the flat ones have been recognized to be a poor instrument in promoting the horizontal, but especially the vertical equity of compensations, while the tiered ones have proven to yield only slightly better results in this respect. As a consequence, schedules have been long discussed as an alternative tort reform capping non-pecuniary losses to curb medical malpractice costs. For example, in the U.S. Bovbjerg et al. (1989) have pointed out the advantages of extending scheduling from workers compensation plans and disability plans to all tort damages. Nevertheless, most of the existing empirical research limits its attention to the adoption of flat and tiered caps,[9] while empirical evidence on the actual effects of scheduled damages is lacking.[10]

The present work aims at filling this gap. We contribute to the wide strand of the literature investigating the impact of tort reforms on the insurance market for medical malpractice, but unlike other empirical studies this work considers a reform that does not stem from a top-down legislative intervention. Overall, the novelty of our study is twofold: (i) we provide an empirical analysis of the impact of schedules of noneconomic damages[11] on insurers' behavior in the market for malpractice insurance in terms of both their presence in the reference line of insurance and the premiums applied at the local healthcare provider level; and (ii) we assess the impact of schedules, taking into account the role played by the enforcing mechanism of the policy itself, that is, the judicial system. The existing empirical literature on caps does not consider the role of the judiciary and generally assesses the effect of tort reforms on insurers (as well as on the other players of malpractice cases) independently from it. Conversely, we argue that the judiciary plays an important role which has to be included in the analysis. Efficiencies/inefficiencies in the enforcement mechanism of schedules are ex-

[5] See, for example, GAO (2003a) and (2003b). The U.S. General Accounting Office stresses the difficulty to ascribe the problem of affordability and availability affecting the malpractice insurance market at least in the U.S. to a specific cause. In particular, the available information does not allow to clearly disentangle the effects potentially exerted by insurance cycles, as well as by the frequency of malpractice claims or by the compensations awarded.

[6] Danzon et al. (2004) identify the cause of malpractice insurance crises (or hard markets) in insurers' under-reserving during the prior soft market period. Specifically, the authors find that the upward revision of loss forecast and reserves following initial under-reserving are positively related to premiums' increases, and that there is a positive relationship between the probability of insurers' exiting the market and the average loss forecast error.

[7] See, for instance, Avraham and Bustos (2010) and Kessler (2011).

[8] We refer only to the case of caps on noneconomic damages and not to caps on punitive damages.

[9] See, for instance, Danzon (2000), Mello et al. (2003), Danzon et al. (2004), and Mello (2006a).

[10] See, Mello and Kachalia (2010).

[11] Hereafter, when we mention schedules, we refer to schedules of noneconomic damages, unless differently stated.

pected to affect how parties involved in malpractice cases (i.e. doctors, insurers and victims) react to the introduction of the reform itself. Our argument is that insurance companies do not only care about improving the predictability of the compensations to be paid, which is expected to be higher under schedules than under flat or tiered caps, but they can be also influenced by the inefficiency related to the timing of the payment and the deterrence level of the legal system on healthcare providers. Moreover, this effect may be particularly significant in the European context, where the number of medical malpractice claims resolved by courts is very high.[12] In particular, we focus on one aspect of the judicial system: its performance measured as the level of civil backlog affecting each courthouse. We associate backlog to court inefficiency and control for this dimension when schedules are adopted.[13]

To perform the analysis, we consider the Italian institutional framework, which lends itself particularly well to this investigation. On the one hand, the public nature of its healthcare system limits the possibility of hospitals' strategic decisions on the composition of the healthcare provision with the aim of reducing their risk of litigation. A limited scope for such strategic behavior reduces unobserved heterogeneity across providers in terms of risk faced, and reduces potential sources of bias in the empirical analysis. Moreover, the discretion granted to patients in choosing among hospitals for medical specialists, lessens the potential territorial effects in terms of characteristics and needs of the population served by the providers. On the other hand, Italy is characterized by high heterogeneity when judicial performance is at stake, both across and within regions, and its courthouses also differ in the timing of schedules adoption.The introduction of this reform, in fact, followed the discretionary decision of each single court with the result that it took place at different points in time for different courts, allowing us to benefit from a quasi-experimental design.[14]

By exploiting this within country territorial variation in terms of both judicial performance and schedules implementation, we rely on methods for the Difference-in-Differences (DID) identification of the impact of the policy change. Overall, this approach makes it possible to appreciate the effect of judicial performance on the decision of private insurers to provide hospitals with malpractice coverage, while allowing us to disentangle the effect of courts' activity from other relevant variables. In addition, to address possible omitted variables problems due to the staggered adoption of schedules, we follow the approach of Snyder and Stromberg (2010) and take advantage of the lack of perfect territorial overlapping between court districts and the territorial competence of healthcare providers to exclude the existence of a perfect correlation between the caseload of courthouses and the activity level of healthcare facilities.

[12]For example, in Germany 40% of malpractice claims are resolved in tribunals and even higher rates are reported by France (60%) and Italy (86%) up to the extreme case of Portugal, where all cases are resolved in courts. See, Nys (2008).

[13]Since backlog is highly correlated to duration of trials, our contribution is marginally related also to that literature addressing the importance of well functioning courts on the activity of firms, such as, among the others, Bianco et al. (2002), Djankov et. al. (2003), Chemin (2010) and Ponticelli (2013).

[14]For the purpose of the present empirical analysis, we do not distinguish the different types of schedules applied by courts. We focus on the adoption of this reform since the key policy change is the shift to schedules irrespectively of the specific method employed to determine the schedules themselves.

Another important contribution relies on the fact that, for the purpose of the present study, we construct a unique dataset from the combination of three distinct data sources: (i) a comprehensive sample of all malpractice insurance contracts for which information is currently available, (ii) data at the court level, and (iii) socio-economic data at the healthcare provider level. The result is a comprehensive database containing all public procurement procedures for malpractice insurance contracts dated from 2000 to 2010 that involve only public healthcare providers dealing with private insurers. The final sample includes 812 awarding processes and is representative of insurance contracts for hospitals' personnel.[15] Our findings show that the introduction of noneconomic damages schedules increases the number of insurers interested in the market of medical liability both in absolute and relative terms (i.e. compared to all potential competitors), when the judicial system is inefficient. Similarly, judicial inefficiency improves market profitability for average value of schedules penetration and such positive effect increases as the weight of schedules grows. Nonetheless, healthcare providers do not seem to benefit from these improvements as no reduction in premiums is observed. Our results, therefore, shed light on a complex set of elements affecting the decisions of insurance companies in malpractice markets, and question whether schedules of damages for pain and suffering, as well as any other limitation to malpractice awards, are an effective way to reduce expenditures on premiums especially in public healthcare systems.

The chapter proceeds as follows: Section 4.2 describes the main institutional elements of the Italian judiciary and of the acquisition process of malpractice coverage by Italian public healthcare providers. Section 4.3 presents the empirical approach applied, while Section 4.4 describes the data we use for the results presented and discussed in Section 4.5. Section 4.6 concludes.

4.2 Institutional Framework

Italy is a well suited case study, because both its healthcare system and its judiciary present peculiarities that are particularly relevant for the purposes of the present work. Specifically, Italian courts differ widely in terms of performance and have followed a very scattered timing in the adoption of noneconomic damages schedules. The combination of these two elements allow us to investigate the impact of the implementation of the reference reform conditional on the performance of the courthouse in charge of it.

On the other hand, as discussed in Chapter 2, the Italian healthcare system is mainly public and is organized on a territorial base: regions are the level of government in charge for the provision of healthcare services, which are delivered to their residents through an insurance scheme managed by LHUs. This configuration has two significant implications. First, the public nature of healthcare providers obliges them to resort to public procurement to be insured against medical malpractice. This foresees the obligation to make publicly available some relevant information on the procurement procedures run and on the characteristics of the coverages procured, allowing us to recover the necessary information to build

[15] Physicians can also have extra insurance coverage. Information on private insurance contracts between physicians and private insurers are not available.

the relevant database. Second, public hospitals must provide the entire range of medical services identified as essential by public authorities. Healthcare facilities cannot refrain from offering a part of this benefit package to reduce the risk of litigation, thus the opportunities for strategic behavior by hospitals are minimized. In addition, even though each LHU is in charge of all the residents in its area of reference, patients are free to choose the provider they prefer. Consequently, the potential territorial effects connected to the characteristics and needs of the population are mitigated. Finally and more importantly, our empirical strategy takes advantage of the peculiar organizational structure of both the healthcare and the judicial systems and, in particular, of the lack of perfect overlapping between the jurisdictions of courts and healthcare providers. These elements allow us to overcome the problem of omitted variables with respect to both the outcomes of interest and courts' performance by excluding the existence of a perfect correlation between the caseload of courthouses and the activity level of healthcare facilities. The simultaneous presence of all these institutional features in a unique framework makes the Italian case a promising setting for our analysis.

4.2.1 The Acquisition of Malpractice Insurance in the Italian Healthcare System

Italian healthcare providers (i.e. LHUs, IHs, THs and RHs) must supply medical malpractice liability insurance for their medical staff, but being public entities they are not allowed to go into the market to freely select a private insurer. On the contrary, providers have to comply with the provisions on public procurement,[16] thus they need to contract out their malpractice risk through a public awarding procedure.[17] Medical staff working in hospitals directly managed by a LHU will be covered by the insurance contract tendered by their LHU, while IHs, THs and RHs run their tenders autonomously.

The procurement procedures applicable to acquire malpractice insurance can be divided into three main categories:[18] 1) open procedures; 2) restricted procedures; and 3) negotiations. The discretionary power of both the auctioneers and the bidders increases moving from open procedures to negotiations, at the cost of transparency, but not necessarily of competition.

Both open and restricted procedures are always applicable and allow all interested and qualified parties to present an offer, but once an offer is submitted, it is no longer modifiable. In addition, under both circumstances, the contracting authority has to verify that applicants satisfy the requirements needed to be admitted to the procedure itself. In open procedures, this assessment occurs simultaneously to the evaluation of the offers submitted, while in restricted procedures the auctioneer first checks the admissibility of applicants and, then, only

[16]Legislative Decree 163, 12 April 2006 (known as the Public Procurement Code).

[17]For a complete and detailed discussion of the Italian legislation on public procurement, see Appendix B.

[18]The Public Procurement Code foresees also a fourth type of procedure, the so-called competitive dialogue. However, this type of tender does not find application with respect to medical malpractice insurance since this type of service does not meet the requirements (e.g. high complexity of the contract) needed to justify the adoption of the competitive dialogue.

the offers of the admitted applicants are examined. Therefore, the main difference between these two types of tenders is of a substantially operational nature. Differently, negotiations can be adopted only under specific circumstances (i.e. urgency reasons or failure of a prior open procedure due to the absence of applicants or appropriate bids) and their auctioneers are free to choose the operators to contact, as well as to discuss the subject and terms of the contract with one or more of them. Therefore, negotiations allow awarding authorities to enter into contact and exchange information with private insurers before the award of the contract.

Thanks to the information collected for this study, it is possible to provide a comprehensive assessment of the relative frequency of the different tender procedures in the Italian market for malpractice insurance. Between 2000 and 2010, 55.5% of the procurement procedures run to contract out medical professional liability insurance by the Italian healthcare providers, for which we have information, took the form of an open tender. Restricted procedures were preferred in 25.5% of the time, while negotiations confirmed to be an exceptional mechanism, whose adoption has been limited to the 19% of the cases (Table 4.1).

Table 4.1: Procurement Procedures per Year and Type

	Awarding Procedures			Contracts		
Year	**Open**	**Restricted**	**Negotiated**	**Open**	**Restricted**	**Negotiated**
2000	26	29	10	29	32	11
2001	52	25	11	72	29	17
2002	32	25	21	40	30	31
2003	50	22	15	99	23	24
2004	42	27	19	54	41	32
2005	32	19	23	38	23	30
2006	17	8	17	31	20	44
2007	45	7	7	76	8	10
2008	54	10	2	90	14	3
2009	48	12	8	74	29	8
2010	53	23	21	101	32	26
Total	451	207	154	704	281	237

Notes: *Awarding procedures*= Public procurement procedures to award medical malpractice insurance; *Contracts*= Medical malpractice insurance policies contracted out through public procurement. *Open*= Open procurement procedures; *Restricted*=Restricted procurement procedures; *Negotiated*=Negotiated procurement procedures.

There is also the possibility for two or more healthcare providers to carry out a common procedure to minimize the administrative costs entailed in the management of tendering processes while taking advantage of a higher bargaining power with respect to bidding companies. However, even if the procedure is a joint one, the winning insurer stipulates separate contracts with each of the auctioneers. In addition, awarding authorities can also open a tender to acquire more than one service, so to have more than one lot in the tender (e.g.

different layers of medical liability insurance, or the insurance for medical liability and legal expenditures). When more than one service is procured, there might be more than one winner for the same awarding procedure, one for each lot included in the call for tender.

Bidders win the tender either because they provide the service according to the lowest price criterion or because they meet the requirements of the most economically advantageous tender criterion (MEAT). In particular, the latter provides a higher discretionary power to auctioneers. In fact, according to the lowest price criterion, the evaluation is based exclusively on the price at which the tendered service is offered and the applicant providing the lowest price wins the procedure. Differently, under the most economically advantageous tender, the auctioneer assesses the offers received based on other parameters besides price (e.g. quality, technical assistance, technical merit and environmental characteristics) and the contracting authority itself decides which parameters to apply and how much to weigh each of them. The auctioneer assigns a maximum score obtainable to each parameter and the tendered contract is awarded to the applicant reporting the highest overall score. When more than one service is tendered, the contracting authority can decide to entrust the different lots according to different awarding criteria.

Table 4.2: Contracts per Type of Procurement Procedure and Type of Awarding Criterion

Type of Procedure	**Lowest Price**	**MEAT**	**Missing**
Open	413	275	16
Restricted	190	83	8
Negotiated	17	166	54
Total	620	524	78

Notes: *Contracts*= Medical malpractice insurance policies contracted out through public procurement. *Lowest Price*=The applied awarding criterion is the lowest price criterion; *MEAT*=The applied awarding criterion is the most economically advantageous tender criterion; *Missing*=The call for tender does not report any information about the type of awarding criterion that is applied in the awarding procedure. *Open*= Open procurement procedures; *Restricted*=Restricted procurement procedures; *Negotiated*=Negotiated procurement procedures.

During the period of observation, 51% of the tendered insurance contracts have been awarded according to the lowest price criterion, whereas the MEAT criterion have been adopted in 43% of all cases (Table 4.2).[19] In particular, the use of the MEAT criterion clearly prevails for negotiations (70%). In the case of restricted procedures there seems to be a preference for the lowest price criterion (68%), which is shown to be the most frequently applied criterion also with respect to open procedures (59%).

Contracting authorities can also rely on insurance brokers, that is private operators acting on behalf of the healthcare providers themselves in carrying out the public procurement procedure. This type of intermediary supports the contracting authority in preparing and

[19]For the remaining 6% of tendered contracts, there is no available information regarding the awarding criterion chosen by the contracting authority.

running the tendering process, as well as in managing the insurance contract once the private insurer has been selected. Between 2000 and 2010, Italian healthcare providers resort to this type of intermediation to carry out 40% of all procurement procedures, equal to 39.5% of all tendered insurance services (Table 4.3).

Table 4.3: Procurement Procedures Run in Presence of Brokers per Type of Procedure

Type of Procedure	**Awarding Procedures**	**Contracts**
Open	151	224
Restricted	100	75
Negotiated	75	118
Total	326	483

Notes: *Awarding procedures*= Public procurement procedures to award medical malpractice insurance; *Contracts*= Medical malpractice insurance policies contracted out through public procurement. *Open*= Open procurement procedures; *Restricted*=Restricted procurement procedures; *Negotiated*=Negotiated procurement procedures.

In 63 procurement procedures, brokerage services have been provided by a temporary consortium of contractors constituted on average by 2.5 brokers. Moreover, out of the 326 contract notices specifying the presence of a broker, 303 disclose also its identity. This additional information has revealed that the first four brokers have been involved respectively in 97, 55, 35 and 31 procurement procedures.[20]

Finally, during the period 2000-2010, we recorded 32 insurance companies providing coverage to 308 Italian healthcare providers and their employees: 11 operating in the three macro-areas (i.e. North, Center, South and Islands), 8 in only two areas, and 13 in one area. Overall, Northern regions are covered by 26 insurers, Central regions by 16 insurers, and Southern regions and islands by 20 insurers (Table 4.15 in Appendix A).[21] Insurers are both national and international companies. If we consider the insurers providing coverage other than for medical liability to healthcare providers during the same period, we can count 37 companies in the North, 26 in the Center, and 28 in the South and in the islands. 17 insurers operate in all areas, 11 only in two areas, and 18 only in one area of the country (Table 4.16 in Appendix A). Therefore, overall, from 2000 to 2010, in Italy there were 46 insurance companies dealing with healthcare providers risk. We consider this latter figure as a good proxy to identify the number of potential competitors in the market for medical liability, of which 32 were actually covering the malpractice risk of the providers.[22]

[20]For an overview of the companies providing brokerage services to healthcare providers during the period 2000-2010, see Table 4.17 in Appendix A.

[21]When an insurance company operates through one or more subsidiaries, only the holding company has been counted.

[22]We control for the fact that the 46 companies, winners of contracts of fire insurance, cars insurance or theft insurance, were also offering medical malpractice insurance as part of their services.

The examination of all this information indicates that Italian healthcare providers acquire malpractice insurance coverage through negotiations only in a limited number of cases. Hence, the selection of insurers is usually done by trying to encourage the participation of all interested companies. Besides, healthcare providers often resort to the support of insurance brokers to improve the management of such selections and of the resulting insurance policies. Nonetheless, the attendance of insurers at these procedures is quite limited. Only a small portion of all the insurance companies listing medical malpractice coverage among their services is actually willing to offer it to providers. Moreover, even those insurance companies that do provide the reference coverage to hospitals do not necessarily operate throughout the country, but prefer instead to restrict their presence to some areas. All these considerations substantially confirm the presence of frictions between private insurers and healthcare organizations in the reference market and the limited capability of the latter to be an attractive customer for the former.

4.2.2 The Italian Judicial System

Medical errors are perceived as a significant problem by almost the entire Italian population (i.e. 97% of citizens) and 69% of citizens are seriously concerned about the safety of hospital patients.[23] In such a responsive context to medical malpractice, the judiciary plays a crucial role as the vast majority of malpractice disputes (86%) are resolved in courts,[24] while alternative dispute resolution procedures, including mediation, have a minor role.[25]

In the Italian legal system both civil and criminal disputes are settled in ordinary courts, which are the default courts for general jurisdiction.[26] Specifically, with respect to medical malpractice, the legal administration of claims takes place in the first grade in Collegial Courts

[23]Nys (2008), p. 28.

[24]In addition, anedoctical evidence shows that most of the malpractice claims brought to courts are actually resolved by civil courts. For instance, the 2011 report prepared by the private insurer Rasini Viganó for the Lombardy region evaluating malpractice risk at the regional level indicates that Lombard healthcare providers received a total of 24,675 civil damages claims between 1999 and 2010, while criminal proceedings for the same period amounted to 1,303 (Rasini Viganó, 2011, p. 16). Marsh (2011) reports the same trend also with respect to private healthcare providers. In fact, according to this study focusing on the activity of 44 private hospitals (38% located in the North, 27% in the Center and 35% in the South) criminal damage claims corresponded to the 4% of total compensation requests received (Marsh, 2011, p. 1).

[25]Nys (2008), p. 21. Only recently, mandatory mediation procedures have been introduced in the Italian legal system. According the Legislative Decree 28/2010, as of March 2011, before filing a claim against a healthcare provider, injured parties are obliged to first resort to mediation. Only once the mediation procedure failed, a legal dispute can be initiated.

[26]The Italian legal system is structured in three different levels of jurisdiction: the constitutional court, ordinary courts and special courts. The constitutional court is responsible for matters related to the constitutionality of legislation, the division of powers, and proceedings against the President of the Republic, while special courts have authority over specific jurisdictions. Specifically, the Italian special courts are: Regional Administrative Courts (*Tribunali Amministrativi Regionali TAR*) for administrative jurisdiction; Military Courts (*Tribunali Militari*), Military Appeal Courts (*Corti Militari di Appello*) and Military Surveillance Courts (*Tribunali Militari di Sorveglianza*) for military jurisdiction; State Auditors' Department for auditing jurisdiction; and Provincial Fiscal Commissions (*Commissioni Tributarie Provinciali*) and District Fiscal Commission (*Commissioni Tributarie Distrettuali*) for fiscal jurisdiction.

or Courts of the First Instance (*Tribunali*),[27] in the second grade in the Court of Appeal (*Corte d'Appello)*,[28] and in the third grade in the Court of Cassation (*Corte di Cassazione*).[29] More important, in the case of a dispute against a public healthcare provider, the competent collegial court necessarily coincides with the court in whose district the healthcare structure is located.

The existing territorial distribution of the Italian Courts of the First Instance directly results from the Royal Decree n.12/1941 and foresees 165 tribunal jurisdiction areas: 25 in the North Western regions, 39 in the North Eastern regions, 31 in the Central regions, and 70 in the South and the two main islands (i.e. Sicily and Sardinia).[30] This territorial organization of tribunals is still very similar to the one created after the unification of the country in 1865. In fact, over time no Court of First Instance has ever been removed, whereas eleven new tribunals have been introduced between the Sixties and the Nineties and 14 court districts were reshaped at the end of the Nineties according to the Legislative Decrees n. 51/1998 and n. 491/1999.

The Italian national legal system is known for being characterized by an overall low performance and its Courts of First Instance generally classify poorly in the world rankings of judiciary efficiency,[31] even though there actually is a significant degree of within country variation. The parameter commonly used to rank different legal systems is the average duration of trials in the first instance. In Italy, between 2000 and 2007, a civil case required on average 977 days, equal to 2.7 years, to come to a close.[32] Anyway, this poor performance cannot be ascribed to scarcity of human resources or lack of funding and not even to the

[27]The Italian legal system foresees other types of ordinary courts: *Giudici di pace*, *Tribunale per i Minorenni* and *Corte d'Assise*. *Giudici di pace* are honorary judges competent for minor civil and criminal claims such as, for instance, automobile incidents disputes. *Tribunale per i Minorenni* has civil and criminal jurisdiction over all the proceedings involving minors.*Corte d'Assise* is competent for felonies.

[28]The Court of Appeal has authority over the appeals against decisions of collegial courts and is arranged in three sections (civil, criminal and labor) and it is organized in 29 districts. Another court of second instance recognized by the Italian legal system is the *Corte d'Assise d'Appello*, which has competence over the appeals against decisions of the first instance court *Corte d'Assise*.

[29]The Court of Cassation is the highest court and is competent for appeals from the courts of second instance. It has the power to change the interpretation and the application of legal provisions made by lower instance courts and its main goal should be to guarantee "*the correct observance and the uniform interpretation of the law*" (Art. 65 Royal Decree 1/30/1941 n.12), while respecting the jurisdiction of the other courts. See, Grembi and Garoupa (2012), p. 8. Beside the civil and criminal divisions, the Court of Cassation comprises also an administrative and a military section and when two or more sections do not share the same interpretation with respect to a specific legal matter, the case is submitted to the United Sections (*Sezioni Unite*).

[30]See, Table 4.18 in Appendix A.

[31]CEPEJ (2008) and World Bank (2013). Specifically, the report of the European Commission for the Efficiency of Justice ranks Italy at the lowest position for the duration of civil procedures (507 days in Italy, 262 in France and 261 in Spain), while the country holds the first position for the pending cases (more than 3.5 million). Similarly, based on the length of civil disputes, the World Bank Doing Business 2013 report, ranks Italy 160th out of 185 countries essentially confirming the result of previous years (158th out of 183 in the 2012 report; 157th out of 183 in the 2011 report, and 156th out of 183 in the 2010 report.

[32]The median duration was equal to 907 days, that is 2.5 years. Information on trials duration at the district level are available through the National Institute of Statistics only till 2007.

courts' caseload. In fact, several studies focusing on the Italian experience have shown that the main driver of the so-defined judicial inefficiency relies on how judges organize their work within each court.[33] For instance, according to Coviello et al. (2009), a trial used to last on average 174 days in Turin and 324 days in Milan, even though the number of new cases filed during the same year is higher in Turin than in Milan and the two courts are quite similar in terms of both socio-economic characteristics and quality of disputes. The authors identify the explanation of this divergence in claims' duration between the two tribunals in the different ways judges organize their work. Specifically, they conclude that all things being equal, the average length of trials is lower for the judges working on few cases simultaneously than those working in parallel on many trials at the same time.

Given that the data on the duration of Italian civil trials is not available after 2007, in the present work, courts' performance is expressed in terms of a backlog index, which represents a good alternative measure being highly correlated with the duration of cases.[34]

The backlog index of Court j=1, 2,...,165, at year t, can be written as:[35]

$$Backlog_{jt}=\frac{New\ Cases_{jt}+Pending\ Cases_{jt}}{Closed\ Cases_{jt}}$$

As such, the level of backlog provides a measure of not yet solved cases per year of court activity, so that it measures the pending caseload of a court in a given year against the court capacity to dispose of these proceedings during the same year. The backlog index takes value 1, when all the entering cases at time t are solved during the same period. On average, between 2000 and 2010, Italian courts reported a backlog equal to 3.59 with a median value of 3.36, while the 95th percentile was equal to 5.66. This means that on average Italian courts dispose of less than one third of the pending caseload in a year and that they would actually need another three and a half years to close all the remaining cases.

In terms of regional variation, the worst performers according to this index are Southern regions with an average value of 4.37, whereas the best performers turn out to be the Northern regions with an average backlog of 3.04.[36] Nevertheless, as shown by Figure 4.1, within each region there are substantial differences in terms of judicial performance.

At the same time, courts vary also with respect to the introduction of schedules. Indeed, as discussed in Chapter 3, the implementation of schedules has not been originally imposed and not even promoted by the legislator (i.e. the central government), but rather courts started to adopt schedules on a voluntary basis since the Eighties. Nonetheless, the adoption of this policy has been widespread across the country and took place in both more efficient and less efficient courts (when efficiency is measured as the civil backlog of the Courts of First Instance).

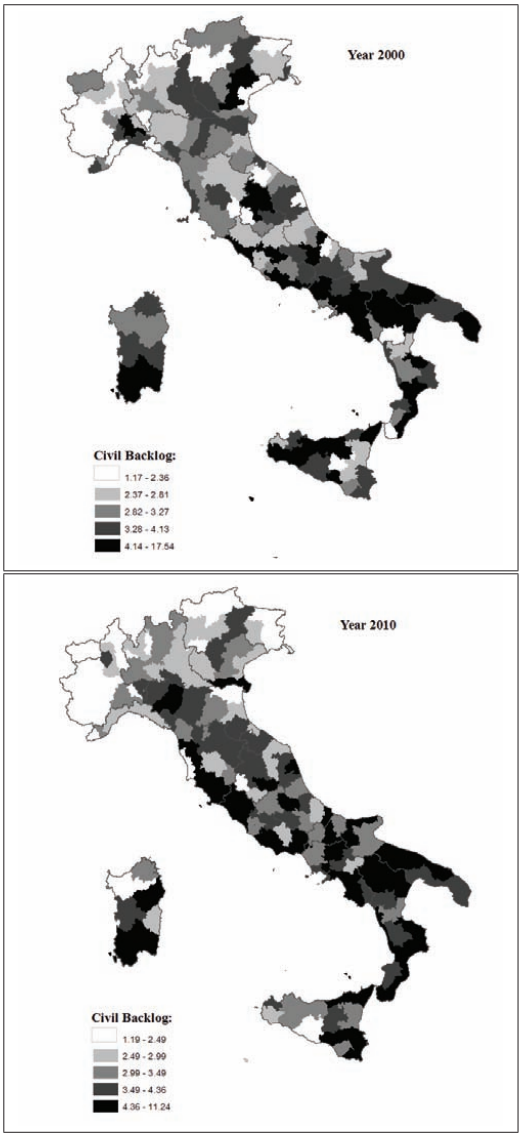
[33] See, Coviello et al. (2012a) and (2012b).

[34] For the period 2000-2007, the correlation coefficient between the average length of civil trials and courts' civil backlog is 0.78.

[35] Specifically, it is the ratio of new open cases during year t plus pending cases at the beginning of each new year (i.e. not solved at year $t-1$) and the closed cases during year t.

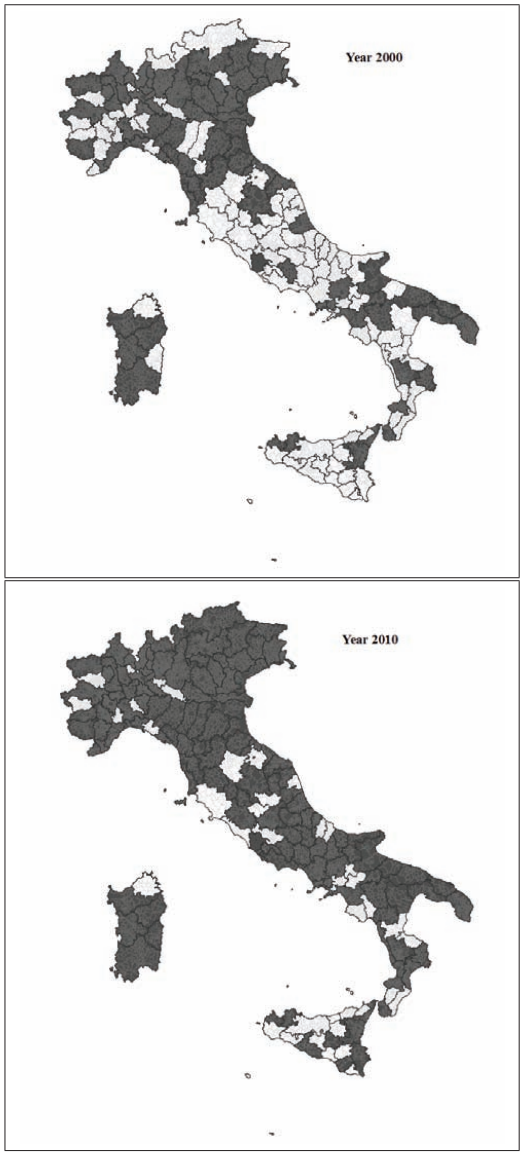
[36] Northern regions can be further distinguished in North Eastern and North Western regions, which reported an average backlog of 3.29 and 2.78 respectively. As for the Central regions, they had an average backlog of 3.51.

Figure 4.1: Civil Backlog per Court District (2000 - 2010)



Notes: In gray Regional borders.

Figure 4.2: Italian Courts Adopting Schedules of Noneconomic Damages (2000 - 2010)



Notes: In black the court districts. In gray the court districts adopting a schedule of noneconomic damages to health, in white the others.

In particular, 8% (14) of the Courts of First Instance relied on schedules in 1996, but this figure has progressively increased over time. Four years later, in 2000, the courts adopting schedules amounted already to 45% (75) and, by 2010, they increased to 76% (125) (Figure 4.2).

Finally, it must be noted that, as documented in Table 4.4, courts have followed different patterns in the introduction of schedules also within a same region. In 2010, seven regions had all their courts applying schedules (i.e. Emilia Romagna, Friuli Venezia Giulia, Trentino Alto Adige and Valle d'Aosta in the North, and Basilicata and Molise in the South). Whilst, in the same year, the regions less covered by schedules were located in the Center and South of the country: 50% of the courts located in Umbria and in Campania were not adopting schedules, while Calabria was characterized by a coverage level of 63.6%.

Table 4.4: Schedules adoption by Region and Year

Regions	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
North											
Emilia Romagna	0.778	0.778	0.778	0.778	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Friuli Venezia Giulia	0.800	0.800	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Liguria	0.667	0.667	0.833	0.833	0.833	0.833	0.833	0.833	0.833	0.833	0.833
Lombardy	0.625	0.625	0.750	0.750	0.750	0.750	0.812	0.812	0.812	0.812	0.812
Piedmont	0.437	0.437	0.625	0.625	0.625	0.625	0.625	0.625	0.625	0.625	0.750
Trentino Alto Adige	0.667	0.667	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Valle d'Aosta	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Veneto	0.875	0.875	0.875	0.875	0.875	0.875	0.875	0.875	0.875	0.875	0.875
Center											
Lazio	0.222	0.222	0.667	0.667	0.778	0.778	0.778	0.778	0.778	0.778	0.778
Marche	0.286	0.286	0.571	0.571	0.714	0.714	0.714	0.714	0.714	0.714	0.714
Tuscany	0.454	0.454	0.636	0.636	0.636	0.636	0.636	0.636	0.812	0.812	0.812
Umbria	0.250	0.250	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500
South and Islands											
Abruzzo	0.250	0.250	0.625	0.625	0.750	0.750	0.750	0.750	0.750	0.750	0.750
Basilicata	0.250	0.250	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Calabria	0.364	0.364	0.636	0.636	0.636	0.636	0.636	0.636	0.636	0.636	0.636
Campania	0.333	0.333	0.417	0.417	0.500	0.500	0.500	0.500	0.500	0.500	0.500
Molise	0.000	0.000	0.333	0.333	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Puglia	0.714	0.714	0.857	0.857	0.857	0.857	0.857	0.857	1.000	1.000	1.000
Sardinia	0.667	0.667	0.833	0.833	0.833	0.833	0.833	0.833	0.833	0.833	0.833
Sicily	0.210	0.210	0.421	0.421	0.421	0.421	0.421	0.421	0.833	0.833	0.833

Notes: *Schedule*=Schedules system on noneconomic damages. The numbers refer to the Courts adopting a schedules system out of the total number of operating Courts within each Region.

4.3 Conceptual Framework

The aim of the present chapter is to evaluate the impact of the adoption of noneconomic damages schedules on insurers' decisions to operate in the insurance market for medical malpractice liability, taking into account also the level of courts' performance measured as civil backlog. In fact, both judicial performance and schedules implementation may simultaneously affect the decisions of insurers, injured parties and physicians. Therefore, a decrease of malpractice pressure combined with a low deterrence legal system may reinforce or weaken the unattractive features of the market. In other words, the analysis of capping damages for pain and suffering without taking into account the enforcing mechanism of the policy is partial and produces potentially biased results.

For instance, consider the expected effect of the introduction of schedules with no reference to the efficiency of the judicial system. Schedules make the market more attractive to insurers since they decrease the degree of both the variability and uncertainty on the possible magnitude of compensations. However, the improved predictability of malpractice awards may be beneficial also to healthcare providers by making it easier for them to assess their coverage needs, thus by increasing their bargaining power during the contracting process. On the other hand, the decrease in malpractice pressure caused by the adoption of schedules may induce physicians to lower the level of precaution, with higher probability of errors and claims. Additionally, scheduled damages increase the predictability of compensations also on the plaintiff side.[37] In particular, if schedules determine a decrease in the potential amount of awards, victims may be discouraged from initiating a legal proceeding. All these different forces coexist and interact and it is not possible to tell *a priori* their intensity and which are going to prevail. Therefore, it is impossible to anticipate the final impact on the attractiveness of the reference market for private insurers.

If we reframe the reference context including the ability of the judiciary to dispose of civil cases, the theoretical predictions could change. Assume the judicial system is very inefficient, that is, the claim processing time is very long. The advantage of higher levels of predictability stands, but compensations could arrive after a very long time. This aspect entails both positive and negative implications for insurance companies. On the one hand, insurers encounter difficulties in predicting when they are going to pay compensations (in the case of occurrence-based coverages) and/or how many cases inherited from previous insurance contracts they will have to pay for (in the case of claims-made coverages). On the other hand, the postponement of payouts can be seen favorably by insurers. In fact, they may actually prefer to delay the time of compensation and to have at their disposal the premiums collected for a longer period to make investments. At the same time, the case of a poor performing court may also entail a higher bargaining power for insurers with respect to victims and the payment of compensations. Again, it is difficult to predict which effect will prevail and, consequently, to anticipate the final impact of a higher civil backlog on insurers' preferences. In addition, the attractiveness of the reference market is also affected by the fact that a longer processing time of claims may discourage victims from suing doctors, but, at the same time,

[37] See, Mello and Kachalia (2010).

it may determine a reduction of the malpractice pressure decreasing the level of care exerted by physicians with a higher likelihood of malpractice cases and suits. As for hospitals, a high backlog may make it more difficult to estimate their insurance needs.

In essence, noneconomic damages schedules and judicial performance affect simultaneously all parties involved in malpractice litigation (Figure 4.5). Their respective final effects are not easily predictable, but it is clear that the actual attractiveness of the malpractice insurance market will result from their interaction and it is therefore an empirical issue.

Table 4.5: Different Expected Effects of Civil Backlog and Noneconomic Damages Schedules

		High Civil Backlog	**Schedule**
Victims	Willingness to file claims	↓	↓
	Predictability of Compensations	↓	↑
Doctors	Precaution level	↓	↓
	Probability of errors	↑	↑
Insurers	Predictability of risk exposure	↓	↑
	Investment possibility	↑	no effect
	Bargaining power with victims	↑	↓↑
Hospitals	Predictability of their coverage need	↓	↑

Notes: *Civil Backlog*=Number of new cases plus number of pending cases from the previous year out of the number of closed cases; *Schedule*=Schedules system on noneconomic damages; *Investment possibility*=The possibility for insurers to invest the premiums they collect.

If the attractiveness of the reference market is affected by schedules adoption and judicial performance as argued, it is reasonable first to expect a variation in the availability of the supply of malpractice coverage. In fact, whether this line of business becomes more or less interesting for insurers, it should be reflected by a higher or lower number of insurance companies operating in this market segment. In particular, we approximate the attractiveness of the malpractice insurance market using both an absolute and a relative measure:

- *Bidders*: the total number of insurers that submitted an offer during a public procurement procedure run by healthcare providers to acquire medical professional liability;

- *Potential Bidders*: the ratio between the number of insurance companies bidding in public procurement procedures for medical malpractice coverage and the total number of potential competitors. The latter coincides with the insurers operating in the country that satisfy the following two conditions: (i) they already cover at least one public healthcare provider against risk other than malpractice liability, and (ii) they also list

medical professional liability insurance among their services.[38]

Bidders represents the actual number of insurance companies interested in providing public healthcare providers with malpractice coverage. Yet, it tells us how attractive, in absolute terms, is the reference market for private firms. Differently, the variable *Potential Bidders* measures this attractiveness in relative terms as it weighs *Bidders* on the number of insurers that are actually capable of offering medical malpractice coverage in the same territorial market.

A variation in the number of insurers offering malpractice coverage may, in turn, modify the market equilibrium, that is, it may lead to the application of new insurance rates. Therefore, there might also be consequences in terms of affordability of these insurance policies. In this respect, we consider the following measures of insurance rates:

- *Premium per personnel*: the premiums paid by healthcare providers for medical professional liability normalized on the total number of employees of the health structures themselves, and

- *Premium per medical personnel*: the premiums paid by healthcare providers for medical professional liability normalized on the number of medical staff of the health structures themselves.

The theoretical predictions on premiums are even less straightforward than those on the market attractiveness, though previous studies show that flat caps decrease the loss ratio of insurance companies.[39] Since premiums are not experience-rated, the mechanism according to which we should expect a decrease in paid premiums is not unequivocally determined. In fact, insurers could actually just cash in the extra rent not decreasing the price of the coverage and this is likely to depend on the actual competitive pressure exerted in a market still characterized by serious frictions.

Furthermore, the examination of whether premiums decrease, once schedules are adopted, provides information on how the potential welfare gains of scheduled damages are split among insurance companies and healthcare organizations. In particular, there are two possible ways to explain why lower premiums emerge in equilibrium: schedules improve the bargaining power of the healthcare providers so that they can extract more rent from insurers and cut better deals during the contracting process, or schedules affect the final prices by increasing competition, or both. Moreover, considering also the possible effects of judicial performance, it could be that competition is actually higher when the bargaining power of insurers with respect to the payment of compensations is potentially higher (i.e. worse performing courts). In those cases healthcare providers are probably not able to benefit in a similar way since they encounter more difficulties in estimating the coverage they need.

[38] We control that the insurers already covering healthcare providers against risk other than medical professional liability, were also offering medical malpractice insurance as part of their services.

[39] See, for instance, Viscusi and Born (1995), Viscusi and Born (2005), and Born et al. (2009).

4.3.1 Empirical Strategy

Since the implementation of schedules took place in a staggered way with different courts applying schedules in different years, Italy offers a unique experimental setting to analyze the implications of limiting noneconomic damages. This framework also has the advantage of ensuring a good control of the potential selection bias based on a weaker assumption than those generally adopted. In fact, following the approach developed by Autor et al. (2006) and later applied in Acemoglu (2011), we rely on the fact that the timing of schedules implementation is not correlated with problems of medical malpractice.[40]

In particular, in this setting, the treatment is given by the implementation of noneconomic damages schedules by courts. The healthcare providers covered at least by one court that introduced noneconomic damages schedules between 2000 and 2010 have been used as the *treated group*, whereas the healthcare providers ruled only by courts that did not modify their process of assessment of compensations for pain and suffering represent the *untreated/control group*. The treatment effect is assessed through a Difference-in-Differences (DID) estimator, which contrasts the changes in the outcome variables of interest for the treated group with the changes observed for the control group.

However, since both treatment and control groups are not randomly chosen as in a proper experimental setting, a possible concern can arise with respect to the endogeneity of the treatment. One could argue that courts with more medical malpractice cases might self select in the adoption of schedules to speed up and/or facilitate the closure of medical malpractice trials. However, as in Autor et al. (2006),[41] the present identification strategy relies on a weaker assumption since what is required for our estimation is only the exogeneity of the treatment year (i.e. the year of introduction of schedules) with respect to the outcome variables of interest. This is highly plausible on the grounds of two reasons.

First, the outcomes of interest refer to medical malpractice, while schedules apply to the entire civil system and therefore to every case of personal injury. In addition, the conception of schedules itself was not aimed at solving problems directly related to medical malpractice, but it was rather due to the difficulties encountered in assessing compensations for the victims of motor accidents. So that, the levels of awards foreseen by schedules were initially set based on compensations for car accidents.[42] Hence, there are strong reasons to believe that the year of schedules implementation is exogenous with respect to our independent variables.

Second, the courts' heterogeneity in terms of structural (e.g. number of judges), operational (e.g. backlog) and even ideological features (e.g. more conservative judges), which could influence the adoption of schedules, is limited and should not constitute a bias for the present analysis. For instance, it could be argued that the courts characterized by the worst

[40] As discussed in Section 3.5.1, scheduled damages were primarily aimed at solving the difficulties encountered in assessing compensations for the victims of car accidents.

[41] Autor et al.(2006) exploit the variation in the extent and timing of implementation of wrongful-discharge protection across U.S. States courts to assess the impact of these laws on employment and wages in state labor markets. In particular, this "*empirical approach contrasts the change in employment and wages in states adopting a given wrongful-discharge doctrine in a given period with that in states not adopting any doctrine during the same time period.*"

[42] For more information, see Section 3.5.

performance were also the first to adopt schedules in order to cope with their inefficiency problems. Differently, one could think that the courts with higher caseloads, which do not necessarily imply higher levels of backlog, were the first to introduce schedules. However, this is not a concern in our case since our identification relies neither on early birds (courts treated before 2000) nor on late comers (courts treated after 2010), but on a 30% of courts shifting to the treatment between 2000 and 2010, which therefore can be considered quite homogeneous under all these different circumstances.

While time invariant factors are controlled for, a further concern refers to the omitted variable bias caused by possible time-varying omitted confounding factors correlated with the outcomes of interest as well as civil backlog. To address this problem, we exploit the organizational structure of both the Italian judicial system and the Italian healthcare system by taking advantage of the partial overlap between court districts and healthcare providers' districts.[43] Within the borders of one region, municipalities are at the same time grouped in LHUs and court districts. The territorial competences of courts are established by the Ministry of Justice, while regional governments are responsible for determining the borders of LHUs. As a result, the territorial competence of a court rarely perfectly coincides with the territorial competence of a LHU and vice versa.

Specifically, partial overlapping works in two directions: a LHU district can be ruled by more than one court, and a court district can cover more than one LHU as shown in Figure 4.3 for two representative regions (i.e. Piedmont and Sardinia) in both 2000 and 2010. For instance, looking at Piedmont in 2000 in Figure 4.3, we see that LHU number 117 is ruled by 4 courts (i.e. Saluzzo, Cuneo, Alba and Mondoví), while the court of Alba covers three LHUs (i.e. LHU number 117, 118 and 108). The partial overlapping between these two territorial competences implies that the caseload of a court and the activity levels of LHUs are not perfectly correlated. Moreover, since whenever a claim for medical malpractice needs to be filed, the competent court is the one where the hospital is located,[44] it might be the case that the medical personnel working in hospitals managed by the same healthcare provider will be called to respond to medical liability in front of different courts.[45]

To take into account the partial overlap between court districts and LHUs districts, the treatment has to be defined as a continuous rather than a binary variable.[46] Since it could

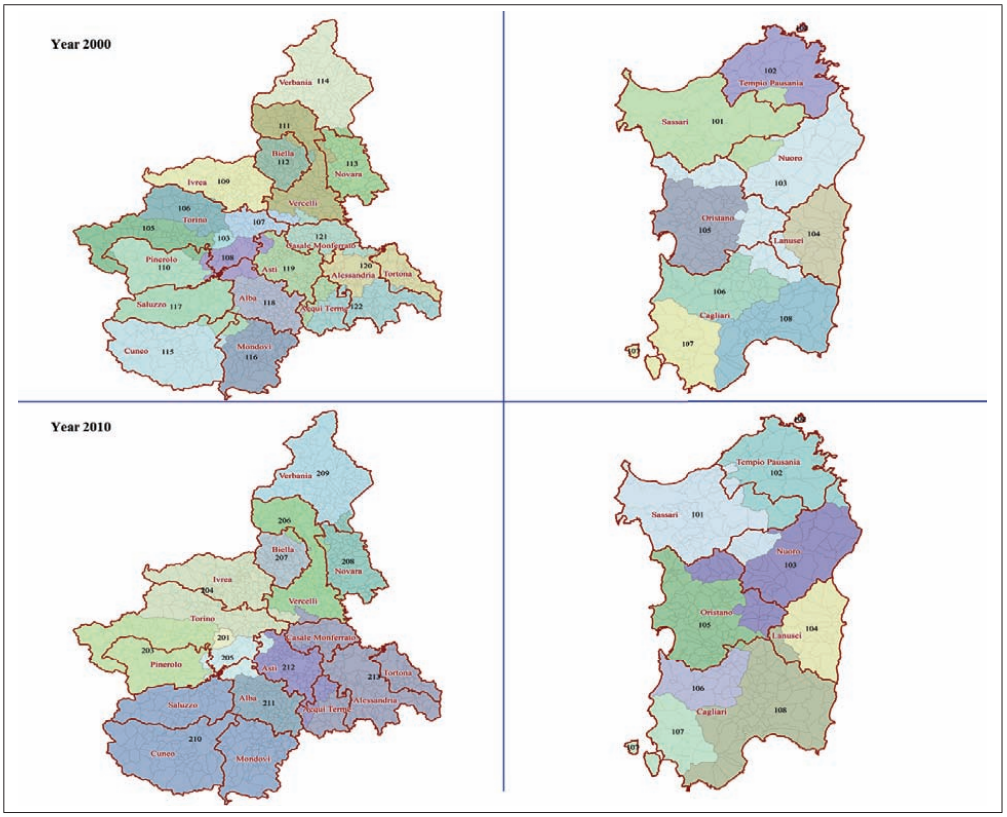
[43]The approach to define the partial overlap is similar to the one used to draw the concept of territorial congruence used to assess the impact of information on political accountability in Snyder and Stromberg (2010).

[44]Recently, the Court of Cassation has reaffirmed this principle with its sentence n. 8093/2009. As for public procurement claims, the competent authority is not represented by the Courts of First Instance, rather by Administrative Courts (*Tribunali Amministrativi Regionali*).

[45]In this respect, a possible concern on the soundness of the identification strategy can be related to the random distribution of hospitals across differently performing courts. This phenomenon is analogous to the courts shopping problem, which can cause the decision of firms to locate in districts more firm friendly. However, this scenario seems quite unlikely in the case of Italian hospitals, because the decision to locate a public facilities in a municipality rather than another is mainly related to legal requirements. In particular, the location of a hospital must comply with specific and detailed population requirements.

[46]Treated providers are not just those which have *Schedule* moving from 0 to 1, but, for instance, also those which have *Schedule* moving from 0 to 0.20.

Figure 4.3: Courts and LHUs: Piedmont and Sardinia (2000 - 2010)



Notes: In red the court districts. In the other colors the territorial competences of LHUs. On the left Piedmont and on the right Sardinia.

be that only a part of the territory of a given LHU is ruled by the treatment, we construct the index, λ_{pjt}, which weighs the relative importance of $Court_j$ at time t for provider p, with specific reference to the level of civil backlog, $Backlog_{pt}$, and the adoption of noneconomic damages schedules, $Schedule_{pt}$.

The basic intuition underneath λ_{pjt} can be explained through a simple example. Assume that a LHU_p directly manages 5 hospitals, 2 placed in the district of $Court_1$ and 3 placed in the district of $Court_2$. Hence, $Court_1$ indexes (i.e. Backlog and Schedule) are weighed $\frac{2}{5}$ and $Court_2$ indexes are weighed $\frac{3}{5}$. The insurer facing the decision to provide coverage to LHU_p should be affected by the indexes of both of $Court_1$ and $Court_2$, combined as the sum of the weighted indexes of the two courts. As a result, since *Backlog* and *Schedule* are weighed by λ_{pjt}, they correspond to the following equivalences:

$$\begin{cases} Backlog_{pt} = \sum_{j=1}^{N_{pt}} (\lambda_{pjt} Backlog_{jt}) \\ \\ Schedule_{pt} = \sum_{j=1}^{N_{pt}} (\lambda_{pjt} Schedule_{jt}) \end{cases} \tag{4.1}$$

with j=1, 2,...165 and $\lambda_{pjt} \in [0, 1]$.

At the same time, we are aware that hospitals are not all identical. For instance, it might be the case that the three hospitals managed by LHU_p and placed in $Court_2$ treat more patients than the other two hospitals. Therefore, they are more important than the two located in $Court_1$, because, in this case, the probability to end up before $Court_2$ is higher. Consequently, the relative importance of $Court_j$ has to be approximated taking into account the activity levels of hospitals, but being cautious not to introduce endogeneity problems. In fact, these levels may be influenced by the malpractice pressure perceived by physicians, as pointed out by the literature on defensive medicine.[47]

Given the public nature of the Italian healthcare system, public providers cannot abstain from offering the entire range of services recognized as essential by public authorities. The aim is to ensure the coverage of the population needs also with respect to riskier medical services. Consequently, malpractice pressure can actually affect some activity measures such as the number of diagnostic tests prescribed, but not the overall organization of the healthcare provision itself. Keeping these considerations in mind, we introduce a weight represented by the number of beds at the hospital level out of the total number of available beds at the healthcare provider level, so that if hospitals in $Court_2$ are responsible for the 70% of the total beds managed by LHU_p, $Court_2$ indexes will play an heavier role. This measure is independent from medical malpractice pressure since it is set according to legal requirements and therefore is not left to the discretionary decision of physicians.[48] This weight, as well as the borders of LHUs, tend to change over time due to public finance constraints or political decisions over the management of the healthcare system,[49] thus λ is time variant.

Defining Y_{cpt} as the outcome of interest (e.g. number of bidders) for the contract c of healthcare provider p at time t, we estimate the specification in Equation 4.2.

$$\begin{aligned} Y_{cpt} = \alpha_p + \gamma_a + \rho_t + Q'_{pt}\varphi + X'_{pt}\beta + Z'_{ct}\pi + \theta Backlog_{pt} \\ + DSchedule_{pt} + \omega Backlog_{pt} * Schedule_{pt} + \varepsilon_{cpt} \end{aligned} \tag{4.2}$$

[47] See, for instance, Kessler and MacClellan (1996) and (2002), Currie and MacLeod (2008).The basic idea is that physicians might perform additional medical treatments and/or procedures, as well as avoid certain patients or medical treatments, with the specific aim of reducing their exposure to malpractice liability. Therefore, the malpractice pressure perceived by doctors might influence their behavior and, consequently, the activity levels of hospitals (e.g the number of performed diagnostic tests or the number of performed surgeries).

[48] The number of beds per thousand inhabitants is decided at the central level by the Government that, over time, has intervened several times implementing different decrees and laws for the reorganization of the national healthcare system (e.g. Law 595/1985 or Law 412/1991).

[49] As discussed in Chapter 2, during the period 2000-2010, the number of LHUs varied from 197 in 2000 to 145 in 2010 managing a total number of 617 hospitals. The decreasing trend in the number of LHUs is due to an attempt to improve competition in the public healthcare system. As a consequence, in the same period the number of IHs decreased from 98 in 2000 to 64 in 2010.

where ε_{cpt} is the error term clustered at the regional level. α_p are healthcare provider fixed effects, γ_a are the geographical area fixed effects (i.e. North West, North East, Center and South), and ρ_t controls for yearly shocks. *Backlog* is a continuous variable expressing courts' civil backlog, that is, the ability of the judiciary to dispose of civil cases in a given year. *Schedule* is a continuous variable, which ranges from 0 to 1 according to the proportion of the healthcare provider's territory covered by $Court'_j s$ district, which adopts schedules of noneconomic damages and $t \geq t*_j$, where $t*_j$ is the year in which the treatment was adopted by $Court_j$.[50] D represents the DID coefficient, that is the estimated impact of schedules introduction. $Backlog_{pt} * Schedule_{pt}$ represents the interaction between *Backlog* and *Schedule*.

We use two sets of controls. First, we control with X_{pt} for a group of socio-economic variables at the level of the healthcare provider that reflect the main characteristics of the population served. In particular, we consider:

- *LHU_popres*: the size of the population covered by the LHU,
- *LHU_income*: the average income level of the population covered by the LHU,
- *LHU_old*: the share of the residents in the LHU older than 65, and
- *LHU_foreigners*: the share of foreigner residents in the LHU.

Secondly, we control with Z_{ct} for specific features of tenders that are particularly relevant when the insurers' behavior is analyzed. In fact, when focusing on the supply side of an insurance contract, we include the main characteristics of the public procurement procedures that can contribute to the explanation of insurers' reactions to the providers' requests. Specifically, we consider:

- *Open Tender*: the type of procurement procedures run by the healthcare providers (i.e. ordinary procedures vs. negotiations),
- *MEAT*: the awarding criteria applied (i.e. the most economically advantageous tender criterion vs. the lowest price criterion), and
- *Broker*: the involvement of an insurance broker in the management of the procurement procedure.[51]

At the same time, we also control with Q_{pt} for those policies at the local level that may influence the behavior of LHUs towards medical malpractice, such as, for instance, the monitoring system for medical malpractice claims, that has been implemented in some regions.[52] Since during the observation period 21% of the procurement procedures were run jointly by two or more healthcare providers, as a robustness check we estimate Equation

[50] This means that *Schedule* is equal to 1 when the entire territory of the healthcare provider p is covered by courts adopting schedules of noneconomic damages.

[51] For further details on variables' definition and their sources see in Table 5.6 in the Appendix A.

[52] Amaral Garcia and Grembi (2012).

4.2 dropping the cases of joint contracting. In fact, it might be that a joint procedure yields better prices due to the higher bargaining power enjoyed by the healthcare providers involved. Furthermore, with respect to *Bidders* and *Potential Bidders*, we also run the same specification on the sole tenders with at least one applicant to verify that the expected effects on the number of bidders did not affect only the procedures that failed due to lack of bids.

4.4 The Dataset and Descriptive Statistics

We use a unique and comprehensive dataset, created specifically for the present study by exploiting three main sources of information. In Italy, there does not exist an exhaustive database gathering together all tenders run by public healthcare providers to contract out their insurance services and the information on the related tendered contracts. However, public procurement procedures have to fulfill transparency and advertising obligations.[53] In particular, they require the release of specific information on the characteristics of both the tenders and the procured contracts on the Official Journal of the European Union (OJ).[54] For this reason, all the information on medical malpractice insurance contracts and related awarding procedures has been gathered through this periodical,[55] which constitutes the most valuable and detailed data source on the tendering processes carried out by the public sector in European countries.

Furtherly, we have integrated and checked this data with information provided by both the Italian Authority for the Supervision of Public Contracts and a private firm, Telemat, specialized in managing information on public contracts and related awarding procedures. All these combined sources allow us to exploit the most complete picture, available so far, of the Italian public procurement market for malpractice insurance for the period 2000-2010.[56] The information obtained comprises, among other things, the identity and type of contracting authority; the location of the contracting authority; the type of procurement procedure adopted; the award criterion applied; the length of the insurance contract; the winner of the procurement procedure; the number of bidders in the tendering process; and the final value of the awarded contract.[57]

[53]For a more detailed description of the transparency and advertising obligations foreseen by the Italian public procurement legislation, see Section 4.8.1 in Appendix B.

[54]The Official Journal of the European Union is a periodical released every working day in all official languages of the European Union. This publication includes a series devoted to legislation, a related series for information and notices, and a supplement dedicated to public procurement.

[55]In particular, we have resorted to the OJ's supplement on public procurement using both its DVD-ROM edition and its online version (the so-called Tenders Electronic Daily - TED).

[56]Only two other studies tried to analyze the public procurement market for malpractice insurance in Italy: Buzzacchi and Gracis (2008) and Perna et al. (2010). However, given the deficiency of information and the difficulties of collecting the data needed, both of them focus on a much shorter time period and, consequently, on a more limited amount of information. Specifically, Buzzacchi and Gracis (2008) recover information on 308 awarding procedures for the period 2003-2006, whereas Perna et al. (2010) examine 56 tendering processes run between 2009 and 2010.

[57]The data collected through both the Official Journal of the European Union and Telemat do not provide any information regarding the identity of bidders.

A second source of information has been the Italian Ministry of Health, which releases data on public providers characteristics (e.g. number of hospitals, personnel, beds). This information was then integrated with data from the Italian Institute of Statistics on the characteristics of the reference population covered by the healthcare providers (e.g. age composition, nationality, average income).

Finally, we collected data on the judicial system through the Italian Ministry of Justice. For each Court of First Instance and year, we have information on the number of new cases, the number of cases closed with a sentence, and the overall number of closed cases. Furthermore, we have reconstructed the process of schedules adoption at the level of the individual court's district gathering data on (i) the year of introduction of schedules of noneconomic losses; (ii) the structure of the schedules (i.e. the monetary value of the points); and (iii) the minimum and maximum compensation foreseen in the hypothesis of death of a family member (i.e parent, child, sibling, grandparent, grandchild and spouse).[58]

Consistently with the institutional framework, we did not include in the final dataset the information regarding the healthcare providers located in Piedmont and, for the period 2007-2010, in Friuli Venezia Giulia. As discussed in Section 2.4.1, these two regions have implemented specific schemes of self-insurance by establishing special regional funds for the management of malpractice risk. Consequently, the process of acquisition of malpractice coverage of the public healthcare providers placed in these two regions significantly differs from that of the structures located elsewhere in the country. In fact, they primarily resort to a public insurer (i.e. the regional government), while the present work is aimed at investigating the effects of schedules and judicial performance on the decisions of private companies to offer malpractice coverage.[59]

Overall, we identify 812 procurement procedures for medical professional liability insurance during the period 2000-2010 for a total of 1,222 observations as shown in Table 4.6. The difference between the number of procurement procedures and the total number of observations is due to the fact that one public procurement procedure might refer to more than one insurance service (i.e. lots>=2) and/or it can gather together more than one auctioneer. Consequently, a single call for tender can be used to contract out one or more medical professional liability coverages for one or more healthcare providers.

During the observation period, 77% of all procurement procedures (i.e. 625) carried out, equaling 78% of all tendered insurance contracts (i.e. 953), have been awarded meaning that we have knowledge of how these tendering processes were completed (i.e. with one or more winners or without adjudication). For the remaining 22% of the cases (i.e. 187 awarding procedures and 269 contracts), there is no information on the outcome as we do not even know whether they ended without the award of the procured contract.[60]

[58] We recover this information from 1996 to 2010.

[59] Other regions have followed the example of Piedmont and Friuli Venezia Giulia (i.e. Veneto, Emilia Romagna, Basilicata and Tuscany). However, their self-insurance schemes became operational after 2010 and, therefore, do not constitute a potential bias for our research question.

[60] With respect to these procurement procedures, it has not been possible to find any additional information once the call for tender was opened.

Table 4.6: Procurement Procedures and Procured Contracts per Year

Year	All Tenders			
	Awarding procedures		**Contracts**	
	Advertised	Awarded	Advertised	Awarded
2000	65	44	73	48
2001	88	71	118	86
2002	78	59	101	71
2003	87	58	146	103
2004	88	57	127	80
2005	74	46	91	59
2006	42	39	95	86
2007	59	56	94	88
2008	66	60	107	100
2009	68	60	111	101
2010	97	75	159	131
Total	812	625	1222	953

Year	Joint Tenders			
	Awarding procedures		**Contracts**	
	Advertised	Awarded	Advertised	Awarded
2000	2	2	4	4
2001	2	2	4	4
2002	0	0	0	0
2003	2	2	50	39
2004	5	4	21	17
2005	1	1	2	2
2006	7	6	48	42
2007	2	2	16	16
2008	4	4	30	30
2009	3	3	30	30
2010	10	10	58	55
Total	38	36	263	239

Notes: *Joint Tenders*= Public procurement procedures run jointly by two or more healthcare providers to award medical malpractice insurance; *Awarding procedures*= Public procurement procedures to award medical malpractice insurance; *Contracts*= Medical malpractice insurance policies contracted out through public procurement.

Table 4.7: Treated and Control Advertised Procurement Procedures per Year

Year	Awarding Procedures		Contracts	
	Treated	Control	Treated	Control
2000	13	65	17	56
2001	11	88	15	103
2002	8	78	12	89
2003	17	89	20	126
2004	14	89	20	107
2005	10	74	14	77
2006	8	46	12	83
2007	9	58	14	80
2008	4	67	11	96
2009	7	68	11	100
2010	6	99	14	145
Total	107	705	160	1062

Notes: *Awarding procedures*= Public procurement procedures to award medical malpractice insurance; *Contracts*= Medical malpractice insurance contracted out through public procurement. *Treated*=In the territory of the healthcare provider running the procedure the coverage level of schedules increased between 2000 and 2010; *Control*=In the territory of the healthcare provider running the procedure the coverage level of schedules did not increase between 2000 and 2010.

In addition, Table 4.7 shows the distribution of advertised procurement procedures per year distinguishing between treated and controls. All this information is available at the provider level: LHUs, IHs, THs and RHs. The analyzed contracts refer to 308 different providers, which represent the 86% of the entire population of Italian providers. In particular, more than half of them are LHUs (61.4%), while slightly less than a third are IHs (25.6%).

Table 4.8: Type of Healthcare Providers per Year (Treated vs. Control)

	LHUs	IHs	THs	RHs
Treated	59	9	2	0
Control	130	70	21	17
Total	189	79	23	17

Notes: $LHUs$=Local Health Units; IHs=Independent Hospitals; THs=Teaching Hospitals; RHs=Institutes for Scientific Research. $Treated$=In the territory of the healthcare provider running the procedure the coverage level of schedules increased between 2000 and 2010; $Control$=In the territory of the healthcare provider running the procedure the coverage level of schedules did not increase between 2000 and 2010.

Conversely, in the dataset, the presence of THs and of RHs is quite limited as they account respectively for 7.4% and 5.5% of all healthcare providers (Table 4.8). During the

same period, 67 healthcare providers were treated since they were covered by at least one court that introduced schedules during the observation period. On the contrary, 231 were not treated as they were ruled exclusively by courts that did not modify their procedure to evaluate noneconomic damages during the same reference period.

Table 4.9: Descriptive Statistics on the Sample

Variable	**Mean**	**Std. Dev.**
Backlog	3.66	1.14
Schedule	0.81	0.38
Bidders	2.19	2.72
Bidders>0	2.72	2.79
Potential Bidders	0.05	0.06
Premium per personnel (ac)	5,906.17	18,492.66
Premium per medical personnel (ac)	9,515.03	31,585.84
Premium per personnel (sc)	4,147.76	18,659.40
Premium per medical personnel (sc)	6,705.61	30,671.57
Open Tender	0.81	0.39
MEAT	0.43	0.49
Broker	0.39	0.49
Joint Contract	0.21	0.41
Duration	34.62	12.14
Number of Beds	708.33	537.76
Personnel	2,115.12	1,609.60
Medical Personnel	1,316.27	1,020.01
LHU_popres	519,031.4	408,876.50
LHU_income	20,516.74	4,081.58
LHU_old	0.20	0.03
LHU_foreigners	0.04	0.03

Notes: *Backlog*=Civil Backlog; *Schedule*=Intensity of implementation of noneconomic damages schedules by the courts covering a same healthcare providers' territory. *Bidders*=The number of insurance companies submitting an offer to a tender for medical malpractice insurance; *Bidders>0*=The number of insurance companies submitting an offer to a tender for medical malpractice insurance where there has been at least one other bidding insurer; *Potential Bidders*=Number of insurers bidding out of potential insurers represented by all the insurers already dealing with healthcare providers that can offer medical malpractice coverage; *Premium per personnel*=Paid malpractice premium normalized by the employed personnel (2011 euros); *Premium per medical personnel*=Paid malpractice premium normalized by the employed physicians and nurses (2011 euros). *Open Tender*=Ordinary public procurement procedure (i.e. open or restricted auction); *MEAT*=The awarding criterion is the most economically advantageous tender; *Broker*=The awarding authority is assisted by an insurance broker. *Joint Contract*=Two or more healthcare providers carry out a common procurement procedure. *Duration*=Duration of the insurance contract in months. (ac)=all contracts. (sc)=single contracts, those with only one contractor. *Number of Beds*=Number of beds at the level of healthcare providers, *Personnel*=Total personnel at the level of healthcare providers, *Medical Personnel*=Employed physicians and nurses at the level of healthcare providers. *LHU_popres*=Population at the LHU level; *LHU_income*=Income per capita (2011 euros) at the LHU level; *LHU_old*=Quota of the population above 65 at the LHU level; *LHU_foreigners*=Quota of the foreign population at the LHU level.

Table 4.9 displays the main descriptive statistics. In the overall sample, for every closed case, a civil court leaves unresolved on average 3.66 proceedings. In 83% of the cases, healthcare providers have opted for and run an open procurement procedure (i.e. an open auction or a restricted auction), while in the remaining 19% of the cases they carried out a negotiation.

Two or more healthcare providers joined together to run a common tendering process in 5% of the cases, which correspond to 21% of the tendered insurance contracts. Healthcare providers have relied on the support of an insurance broker in 39% of the times, whereas they applied a more flexible awarding criteria in 43% of the tenders preferring the most economically advantageous tender criterion to the lowest price one.

More interestingly, the insurance companies actually presenting an offer to a procurement procedure and, therefore, interested in providing Italian healthcare providers with medical professional liability amounted on average to 2. This figure represented only 5% of all potential competitors. In other words, only 5% of all insurers already providing other insurance policies to Italian healthcare facilities, but also capable of offering this type of coverage, were actually doing so. Furthermore, the average number of bidders turns out to be limited even when we do not consider the procurement procedures that failed for absence of bids. In fact, this figure increases from 2.19 to 2.72 insurers.

On average, healthcare providers pay 4,148 euros per general employee, that is equal to 6,706 euros per medical employee, to cover their personnel against third party liability. These premiums increase to 5,906 and 9,151 euros respectively if we take into consideration also the procurement procedures run jointly by two or more providers. As for the operational characteristics of the LHUs, they are responsible for providing medical care services to an average population of 519,031 individuals with an average income equal to 20,516 euros. On average, 20% of the population covered is represented by individuals older than 65, whereas 4% is constituted by foreign individuals. Besides the descriptive statistics on the overall sample, Table 4.10 reports some descriptives for the treated and the control.[61]

Overall, the data collected shows that the acquisition of insurance coverage against malpractice by Italian healthcare providers is characterized by the predominant use of auctions (i.e. open or restricted) that are only in a marginal part run jointly by two or more contractors. Nonetheless, the vast majority of procurement proceedings are open to all potential interested applicants, the average participation of insurers is very low to the extent that only a very small portion of all the insurance companies capable of offering malpractice policies to hospitals, actually do so.

[61] Since courts are switching to the treatment (i.e. schedules introduction) in different years, the usual graphical tests are not suitable for our dataset.

Table 4.10: Descriptive Statistics (Treated vs. Control)

Variable	**Treated**	**Control**
Bidders	2.07	2.21
	(2.26)	(2.79)
Bidders>0	2.83	2.71
	(2.20)	(2.86)
Potential Bidders	0.04	0.05
	(0.05)	(0.06)
Premium per personnel	3,209.12	6,385.24
	(5,108.19)	(19,916.95)
Premium per medical personnel	5,219.05	10,277.72
	(8,064.65)	(34,055.74)

Notes: Mean values reported. Standard deviations in parenthesis. *Bidders*=The number of insurance companies submitting an offer to a tender for medical malpractice insurance; *Bidders>0*=The number of insurance companies submitting an offer to a tender for medical malpractice insurance where there has been at least one other bidding insurer; *Potential Bidders*=Number of insurers bidding out of potential insurers represented by all the insurers already dealing with healthcare providers that can offer medical malpractice coverage. *Premium per personnel*=Paid malpractice premium normalized by the employed personnel (2011 euros); *Premium per medical personnel*=Paid malpractice premium normalized by the employed physicians and nurses (2011 euros). *Treated*=In the territory of the healthcare provider the coverage level of schedules increased between 2000 and 2010; *Control*=In the territory of the healthcare provider the coverage level of schedules did not increase between 2000 and 2010.

4.5 Results

4.5.1 Description of the Results

Tables 4.11 and 4.12 present the main results for the attractiveness of the market for medical malpractice insurance, that is, for insurers' decisions to provide medical professional liability coverage to healthcare providers. For each outcome variable, we have estimated the same model specification for the entire dataset and for the dataset without joint contracts (i.e. more than one healthcare provider as auctioneer) as a robustness check. Nevertheless, to interpret these effects we need to remember that while *Schedule* can be set equal to zero as this situation would correspond to the case in which schedules are not adopted by any of the courts ruling the territory of a given healthcare provider, the same does not hold for *Backlog*. In fact, the minimum value of civil backlog is 1, which reflects the absence of backlog as the court is capable to dispose of all entering and pending cases. Therefore, while the coefficient of *Backlog* (θ) can be interpreted independently from the coefficient of the interaction between *Backlog* and *Schedule* (ω), the impact of *Schedule* is always the sum of

its coefficient (D) and the coefficient of the interaction (ω).

In order to interpret the different coefficients and provide an idea of the magnitude of these effects, different scenarios have been simulated. In particular, as explained in Section 4.3.1, our treatment is a continuous variable as it is measured in relation to LHUs districts. Given that the territory of a LHU may be ruled by more than one court, the use of scheduled damages may actually cover only a portion of the LHU's district. As a consequence, in order to perform these simulations we have to consider the distribution of the intensity of the treatment (i.e. *Schedule*). In practice, this means that we provide the magnitude of the impact of a standard deviation increase in *Schedule* (i.e. 0.38) for different levels of *Backlog* using the percentiles of *Backlog* distribution. Similarly, to interpret the effects of a standard deviation increase in *Backlog* (i.e. 1.14) we take into account different levels of *Schedule* according to our estimates.

Table 4.11: Bidders

	Bidders		**Bidders>0**	
	All Contracts	**Single Contracts**	**All Contracts**	**Single Contracts**
IRR	(1)	(2)	(3)	(4)
Backlog	0.785***	0.749***	0.715***	0.793***
	(0.054)	(0.045)	(0.089)	(0.041)
Schedule	0.556	1.462	0.461	1.269
	(0.308)	(0.992)	(0.250)	(0.875)
Backlog*Schedule	1.504**	1.728***	1.787***	1.696***
	(0.244)	(0.339)	(0.297)	(0.285)
FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Obs	577	496	416	307

Notes: *All Contracts*=All malpractice insurance contracts (with one or multiple contractors); *Single Contracts*=All malpractice insurance contracts with only one contractor. *Bidders*=The number of insurance companies submitting an offer to a tender for medical malpractice insurance, *Bidders>0*=The number of insurance companies submitting an offer to a tender for medical malpractice insurance where there has been at least one other bidding insurer. *Backlog*=Civil Backlog; *Schedule*=Intensity of implementation of noneconomic damages schedules by the courts covering a same healthcare providers' territory. *Controls* include: *Open Tender*, *MEAT*, *Broker*, *Duration*, *Joint Contracts*, *LHU_popres*, *LHU_income*, *LHU_old*, and *LHU_foreigners*. *FE*= Fixed effects at the year, provider, and geographical area level. Poisson regressions. Coefficients represent incidence-rate ratios so that a coefficient higher than 1 stands for positive impact and a coefficient lower than 1 for negative impact. Standard errors clustered at the regional level in parenthesis. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

First, we consider the impact of *Schedule* and *Backlog* on the absolute number of bidders, thus on the insurers actually operating in the reference market (Table 4.11).[62] With respect to *Backlog* alone, we obtain that the number of insurers providing medical professional liability insurance decreases as civil backlog increases in a market with no scheduled damages for pain and suffering. However, once the territorial coverage of schedules is different from zero, then the market attractiveness for insurers increases and grows to a greater extent the slower the judicial process. Specifically, an increase in *Backlog* reduces the number of insurers by 10% in the sample of all contracts when *Schedule* is equal to 0. Whilst, for an average intensity of *Schedule* (i.e. 0.81), the same variation in courts' performance raises the number of bidding insurers by 11% and this increases to 16% with *Schedule* equal to 1.

An increase in the intensity of *Schedule per se* does not have a significant effect and seems to improve market attractiveness in some specifications while decreasing it in others. However, when interacted with *Backlog*, *Schedule* turns out to have a robust significant effect. The simulations performed indicate that an increase in the intensity of schedules application in an inefficient judicial context makes the medical malpractice insurance market more attractive and it increases the number of insurers willing to provide coverage. An increase of a standard deviation of *Schedule* (i.e. 0.38) when the judiciary is fully efficient (i.e. *Backlog*=1) produces a 1% decrease in the number of bidders in the entire sample. The same increase for an average performing court (i.e. *Backlog*=3.66) raises by 22% the number of insurance companies attracted by the reference market, whereas for the tail of very poor performing courts (i.e. *Backlog*=5.67, that is the 95th percentile of *Backlog* distribution) this impact on bidders is equal to plus 38%.[63]

These results are consistent for all our specifications and are also confirmed with respect to the number of bidders out of all potential competitors (i.e. *Potential Bidders*) (Table 4.12).[64] When a court is capable to dispose basically all the pending and entering cases (i.e. *Backlog*=1), an increase of a standard deviation of *Schedule* is estimated to reduce the relative number of bidders by 8% in the entire sample.

Conversely, as soon as the judiciary moves away from this level of performance, the relative attractiveness of the malpractice insurance line grows. So that, for instance, the number of bidders out of all potential competitors rises by 50% when an increase in the territorial coverage of schedules occurs in an averaging performing judicial system. This means that the increase in the number of insurance companies attracted by the reference line of insurance is not due to the simple entrance of new insurers that never worked with healthcare facilities before. Still, there is a shift in some insurers, which were already working with healthcare providers, from not being, to being willing to cover Italian healthcare organizations against third party liability. Such a phenomenon is consistent with the difficulties to operate in the reference business. The provision of malpractice coverage to medical organizations requires

[62]Table 4.11 reports incidence rate ratios (IRR) values, because we are applying a Poisson estimator. Consequently, values higher than 1 identify coefficients with a positive effect on the reference outcome, whereas values lower than 1 stand for a negative effect.

[63]In particular, for more information on how to interpret incidence rate ratio, see Cameron and Trivedi (2005), p. 562.

[64]Table 4.12 reports ordinary least squares (OLS) estimation results.

Table 4.12: Potential Bidders

	All Contracts	**Single Contracts**
OLS	(1)	(2)
Backlog	-0.015**	-0.021***
	(0.006)	(0.007)
Schedule	-0.068**	-0.004
	(0.029)	(0.040)
Backlog*Schedule	0.029***	0.039***
	(0.008)	(0.013)
FE	Yes	Yes
Controls	Yes	Yes
Obs	577	496

Notes: *All Contracts*=All malpractice insurance contracts (with one or multiple contractors); *Single Contracts*=All malpractice insurance contracts with only one contractor. *Potential Bidders*=Number of insurers bidding out of potential insurers represented by all the insurers already dealing with healthcare providers that can offer medical malpractice coverage. *Backlog*=Civil Backlog; *Schedule*=Intensity of implementation of noneconomic damages schedules by the courts covering a same healthcare providers' territory. *Controls* include: *Open Tender*, *MEAT*, *Broker*, *Duration*, *Joint Contracts*, *LHU_popres*, *LHU_income* *LHU_old*, and *LHU_foreigners*. *FE*= Fixed effects at the year, provider, and geographical area level. OLS regression. Standard errors clustered at the regional level in parenthesis. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

specific expertise that combines the knowledge of the insurance industry and of malpractice coverage with that of the hospital sector.

As for courts' performance alone, an increase of a standard deviation of *Backlog*, when noneconomic damages are not scheduled, determines a 30% decline of the relative attractiveness of the market. This negative effect gets smaller and smaller for higher levels of schedules coverage. So that, for instance, the number of bidders out of all potential medical malpractice insurers decreases by 4% when there is an intensity of schedules implementation equal to 0.4, while it increases by 24% for an average value of *Schedule* (i.e. 0.81).

Finally, it is important to remark that no significant effect is detected in relation to paid premiums (Table 4.13).

Table 4.13: Paid Premiums

	Per Personnel		**Per Medical Personnel**	
	All Contracts	**Single Contracts**	**All Contracts**	**Single Contracts**
OLS	(1)	(2)	(3)	(4)
Backlog	-63.352	-116.330	-172.341	-190.252
	(343.919)	(391.117)	(548.540)	(645.541)
Schedule	-1,326.754	-2,104.937	-2,182.202	-3,680.632
	(2,024.897)	(2,187.660)	(3,235.044)	(3,441.143)
Backlog*Schedule	98.986	302.969	183.747	526.217
	(420.005)	(331.458)	(712.428)	(567.250)
Controls	Yes	Yes	Yes	Yes
FE	Yes	Yes	Yes	Yes
Obs.	577	496	577	496

Notes: *All Contracts*=All malpractice insurance contracts (with one or multiple contractors); *Single Contracts*=All malpractice insurance contracts with only one contractor. *Per Personnel*=Paid malpractice premium normalized by the employed personnel (2011 euros); *Per Medical Personnel*=Paid malpractice premium normalized by the employed physicians and nurses (2011 euros); *Backlog*=Civil Backlog; *Schedule*=Intensity of implementation of noneconomic damages schedules by the courts covering a same healthcare providers' territory. OLS regressions. *Controls* include: *Number of Beds*, *Open Tender*, *MEAT*, *Broker*, *Duration*, *Joint Contracts*, *LHU_popres*, *LHU_income*, *LHU_old*, and *LHU_foreigners*. *FE*=Fixed effects at the year, provider, and geographical area level. Standard errors clustered at the regional level in parenthesis. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

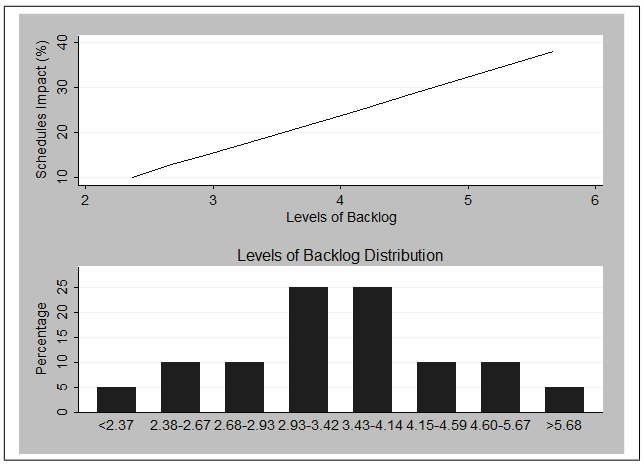
4.5.2 Discussion of the Results

The outcomes of an increase in schedules coverage on both *Bidders* and *Potential Bidders* are consistent with the combined expected effect of *Schedule* and *Backlog* on the expected frequency and severity of errors. A well performing court entails a higher degree of certainty in trials' duration, thus injured parties might be encouraged to file claims, exerting a stronger pressure on physicians, who therefore have higher incentives to take an efficient level of care. In such a context, an intensification of schedules adoption has the actual effect of decreasing the malpractice risk perceived by doctors leading to more frequent, and potentially more serious, errors. Yet, since it is not straightforward for insurers to estimate the potential increase in errors and related claims that they will have to face, this effect might contrast that of the efficient court system, making the malpractice insurance market less attractive for the incumbents. For new operators, this reduction in the market attractiveness is higher, because they suffer a more limited knowledge of the specific line of business and of its dynamics. By contrast, if an increase in the territorial coverage of schedules occurs in a poor performing judiciary, the subsequent reduction of the variability and uncertainty of awards reinforces the attractive features of the market for both existing and prospective insurers.

To make the interpretation of the final results more straightforward given the actual distribution of *Backlog* and *Schedule*, we plot graphs with an upper part reproducing the estimated effects of either *Backlog* or *Schedule* given different values of the other variable, and a lower part with the actual distribution of the latter in the sample. As a matter of fact, it might be the case that full judicial efficiency (i.e. *Backlog*=1) is a scenario that never takes place in our sample, or that *Schedule* is only in a very limited number of cases equal, for instance, to 0.2. Yet, this further exercise will help to form a better view of the predicted effects and to understand – through a visual inspection based on the actual distribution of observations – the relative importance of simulating the actual effects of one variable for different points of the distribution of the other (i.e. for specific possible values of *Schedule* or *Backlog*). The simulated impact of increases of *Schedule* on *Bidders* and *Potential Bidders* are plotted in Figures 4.4 and 4.5 respectively, while the effects of a change of *Backlog* on the same outcomes are plotted in Figures 4.6 and 4.7.

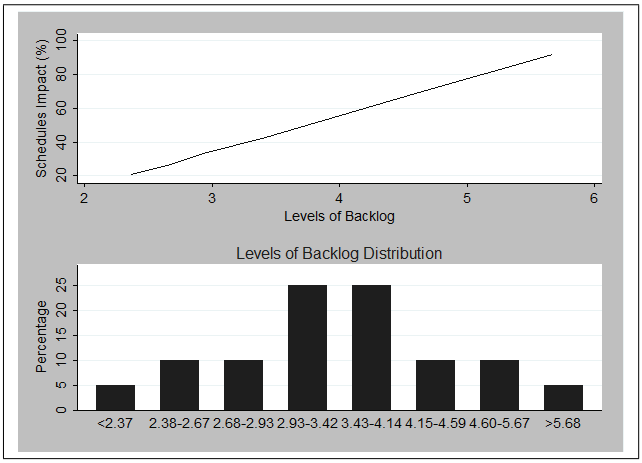
In reality, as depicted in the lower part of Figures 4.4 and 4.5, the ideal case of the impact of *Schedule* in the hypothesis of a fully efficient court basically does not describe situations that can be found in our sample. Only 5% of the courts in our sample report a level of civil backlog lower than 2.37, whereas around 50% register a value between 2.93 and 4.14. This means that for a small fraction of cases an increase in the territorial coverage of schedules enhances the presence of bidding insurers by 10% and these bidders weighed on all potential competitors grow by 22%. Whilst, for a more representative part of the sample an increase of a standard deviation of *Schedule* raises the absolute number of bidders between 15 and 25% and the weighed one between 35 and 60%.

Figure 4.4: Effects of Noneconomic Damages Schedules on Bidders



Notes: Vertical axis: Estimated impact of an increase of a standard deviation of *Schedule*— 0.38 — given different levels of civil backlog on the number of bidders. The impact is expressed in percentages. Horizontal axis: Levels of civil backlog.

Figure 4.5: Effects of Noneconomic Damages Schedules on Potential Bidders

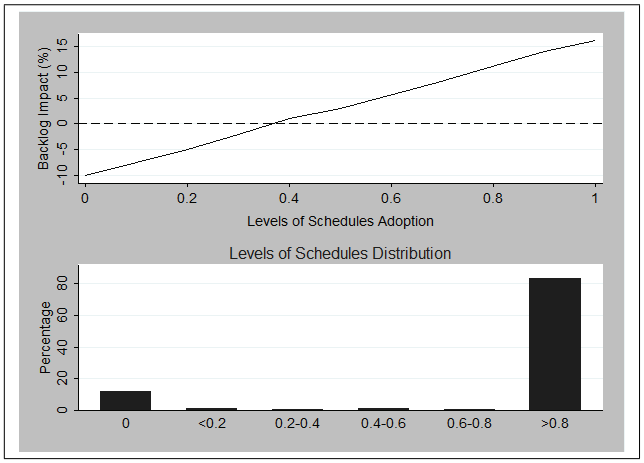


Notes: Vertical axis: Estimated impact of an increase of a standard deviation of *Schedule*— 0.38 — given different levels of civil backlog on the number of bidders out of all potential competitors. The impact is expressed in percentages. Horizontal axis: Levels of civil backlog.

The most likely explanation behind the negative relationship between *Backlog* and insurers' interest in the reference market when noneconomic damages are not scheduled is that poorly performing judiciaries entail greater difficulties for insurance companies in determining their risk exposure. A high civil backlog means that it is more complex for insurers to predict when a case will come to an end. Therefore, in the case of an occurrence-based policy, insurers do not know when and how much they will have to pay; while in the case of a claims-made policy, insurers cannot also predict how many cases they will inherit from previous years. These negative implications prevail on the possible advantage of postponing the payment in the future gaining more time to invest the collected premiums, and poorly performing courts end up discouraging insurance companies from offering malpractice coverage. Differently, if courts' backlog grows in a context covered, even partially, by schedules, then the potential increase in the number and severity of medical error is contrasted by the positive effect of schedules on the predictability of compensations and also by an increase in the bargaining power of insurers with respect to victims and the payments of compensations.

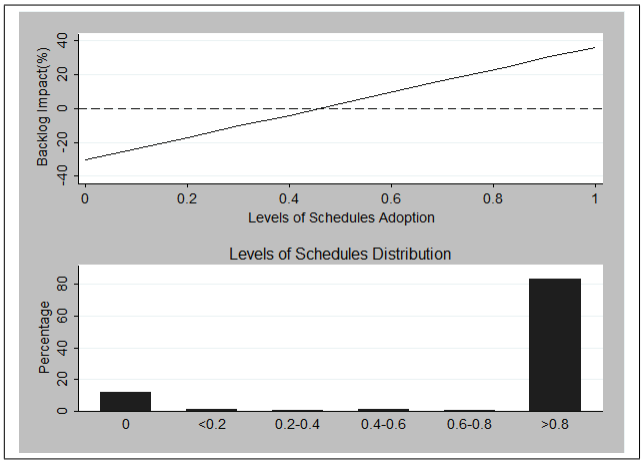
According to the actual distribution of schedules adoption in our sample (lower part of Figures 4.6 and 4.7), once civil backlog increases, we estimate a decrease in the number of bidding insurers only for 17% of the cases, whereas in the overwhelming majority, we estimate an increase in the number of insurers attending the procurement process. Likewise, a lengthening of the processing time of trials produces a decline in the number of bidders out all potential competitors in 18% of the cases. In fact, the upper part of both Figures 4.6 and 4.7 shows that the negative impact of an increase in *Backlog* on both the absolute and weighed number of insurers ranges between -10 to -2% and -30 to -17% respectively, as the

Figure 4.6: Effects of Backlog on Bidders



Notes: Vertical axis: Estimated impact of an increase of a standard deviation of *Backlog*— 1.14 — given different levels of *Schedule* on the number of bidders. The impact is expressed in percentages. Horizontal axis: Levels of schedules implementation.

Figure 4.7: Effects of Backlog on Potential Bidders



Notes: Vertical axis: Estimated impact of an increase of a standard deviation of *Backlog*— 1.14 — given different levels of *Schedule* on the number of bidders out of all potential competitors. The impact is expressed in percentages. Horizontal axis: Levels of schedules implementation.

intensity of schedules adoption grows from 0 to 30% in the healthcare provider's territory. For a coverage level of around 40%, a worsening of the judicial performance actually increases the number of bidders by 1% which becomes 3% if the healthcare provider's territory is covered for a 50%. Similarly, the number of bidding insurance companies out of all potential competitors decreases by 4% for a coverage level of around 40%, but it grows by 3% when the intensity of schedules adoption amounts to 50%.

As for paid premiums, the lack of significant results is not at odds with the expectations since insurance rates require a lengthly process of adjustment to changes in paid compensations after an increase in the coverage of schedules.[65] Therefore, our observation period might be too short to appreciate the impact on the premiums paid by healthcare providers.

It might also take time to appreciate the potential impact of an increase in competition. We can expect that the new bidders attracted by the reference market after this variation in *Schedule* are in a disadvantaged position compared to incumbents. In fact, they have to deal with a completely new business that significantly differs from other lines of insurance.[66] Therefore, these new entrants might not be able from the very beginning to make an offer that constitutes a real threat for the companies already operating in the market and the increase in the number of bidding companies results in being too weak to immediately affect insurance rates.

However, even if the market becomes more attractive to insurers, healthcare providers might not be able to extract the rent out of the insurance companies. Markets become more attractive especially in very poorly performing judicial districts. The healthcare providers covered by those districts could suffer from such an information asymmetry when it comes to estimate their risk exposure that they are not able to take advantage from the increased competition during the acquisition of malpractice coverage. Being without proper monitoring systems and dealing with long lasting trials that give less valuable guidance on the attitude of judges towards damages and their assessment, makes it more difficult for hospitals to be aware of the coverage they need. Hence, since an increase in market attractiveness for insurers does not reduce the information gap for providers, it might not lead to a variation in premiums.

4.6 Concluding Remarks

The present chapter provides an empirical evaluation of the impact of an increase in the territorial coverage of noneconomic damages schedules on the number of insurers operating in the market for malpractice insurance – in absolute terms and in relation to all potential competitors in the market – and on insurance premiums. The novelty of our approach, aside from working at the healthcare provider level, is grounded in the analysis of schedules

[65] See, for instance, Currie and MacLeod (2008). Specifically, the authors point out that, given the lengthy mean time between an injury occurrence and the settlement of a claim (6 years in the U.S. experience), tort reforms, including caps, affect premiums only with a relative long lag. Differently, for instance, the probability of a claim can be faster responsive to these legislative interventions.

[66] See Mello (2006b).

adoption in the context of different scenarios of its enforcing mechanism, that is, the judicial system.

Our results are based on the analysis of the Italian case, whose institutional framework lends itself particularly well to the investigation of the impact of schedules. First, the public nature of the Italian health system limits the strategic decisions, that are made by healthcare organizations with the intention of reducing their litigation risk, on the composition of medical services. Second, Italy is characterized by a spatial variation in both the implementation of schedules and judicial performance. Third, the imperfect territorial overlapping between court districts and healthcare providers' districts rules out a possible correlation between courts' caseload and hospital activity. All these elements allow us to benefit from a quasi-experiment design with the exogeneity of the year of treatment defended on the base that schedules apply to every kind of injury.

More in general, the present analysis sheds light on the potential impact of malpractice reforms in countries where trial cases play a key role with respect to malpractice litigation. The main indication that emerges from our findings is that while premiums are not significantly affected, the level of courts' civil backlog and the intensity of schedules adoption conditional on judicial performance influence the participation rate of private insurers in the reference market. Specifically, depending on courts' performance, this market becomes more, or less attractive for insurance companies. In particular, the higher the civil backlog in the absence of scheduled damages, which increases the uncertainty and potential length of claims, the fewer the insurers willing to cover public healthcare providers against third-party liability. In addition, the share of insurers willing to operate in the reference market gets smaller also compared to all potential competitors. Hence, the lower number of companies offering malpractice coverage reflects a loss of interest in this specific line of insurance compared to other insurance services. The main determinant of this negative relation is that companies facing poorly performing courts have greater difficulties in predicting how much and how many damages claims they will compensate due to the more uncertain and longer duration of trials. Furthermore, these negative implications end up playing a greater role in driving the decisions of insurers than the potential advantage of delaying the payment of compensations and of having at their disposal the premiums collected for a longer period.

Conversely, the intensity of the adoption of schedules increases the attractiveness of the reference line of insurance when the judicial system is a poor performer. The longer the time required by the judiciary to dispose a claim, the bigger is the positive effect exerted by this legislative intervention, and the more attractive the reference market becomes. In such contexts, insurers exploit the double advantage of a higher degree of certainty over the final amount of the compensations to be paid and a more stringent bargaining power with respect to plaintiffs and the payment of compensations. Moreover, this positive result also emerges with respect to the market's relative attractiveness. This means that the increased number of insurers interested in covering public healthcare providers against malpractice actually corresponds to a shift in some of the existing competitors towards the reference market.

Finally, the absence of significant effects on paid premiums could be due to the fact that it takes time before insurance rates are adjusted and competition exerts an impact on prices after the intensification of schedules adoption. At the same, it could also be that healthcare

providers are simply not able to take advantage of the higher presence of insurers because of their limited capacity in determining their coverage need, which lowers their bargaining power during tenders. Our analysis suggests that when the target is a decrease in premiums, policymakers should try to improve not only the attractiveness of the market to insurance companies, but also the bargaining power of healthcare providers with respect to private insurers. In this regard, for example, a possible instrument to strengthen the bargaining power of Italian hospitals could be the implementation of monitoring systems for malpractice claims as shown by Garcia and Grembi (2012). The authors find precisely that such a policy increases the available information on malpractice, leading to more convenient premiums. Specifically, thanks to this greater amount of information, providers become more aware of their risk exposure. Consequently, they would improve their ability "*to extract the rent from private bidders.*"[67]

[67]Garcia and Grembi (2012), p. 18.

4.7 Appendix A: Additional Tables and Figures

Table 4.14: Variables definition and sources

Variable	**Type**	**Definition**	**Source**
Backlog	Continuous	Number of new cases plus number of pending cases from the previous year out of the number of closed cases	IMJ
Bidders	Continuous	Number of insurance companies submitting an offer to a tender for medical malpractice insurance	TED, ASPC and Telemat
Bidders>0	Continuous	Number of insurance companies submitting an offer to a tender for medical malpractice insurance where there has been at least one bidder	TED, ASPC and Telemat
Broker	Dummy	Equal 1 if (and 0 otherwise): the contracting authority is assisted by a broker	TED, ASPC and Telemat
Duration	Continuous	Length of the contract expressed in months	TED, ASPC and Telemat
Joint Contract	Dummy	Equal 1 if (and 0 otherwise): two or more healthcare providers carry out a common procurement procedure	TED, ASPC and Telemat
LHU_foreigner	Continuous	Quota of the foreign population at the local healthcare provider level	IMH and ISTAT
LHU_income	Continuous	Income at the local healthcare provider level	IMF
LHU_old	Continuous	Quota of the population above 65 at the local healthcare provider level	IMH and ISTAT
LHU_popres	Continuous	Population at the local healthcare provider level	IMH
MEAT	Dummy	Equal 1 if (and 0 otherwise): the applied award criterion is the most economically advantageous tender criterion	TED, ASPC and Telemat

Notes: TED= Tender Electronic Daily; $ASPC$=Italian Authority for the Supervision of Public Contracts; $Telemat$=Private firm specialized in the management of information on public contracts and public procurement procedures; IMH= Italian Ministry of Health; IMF= Italian Ministry of Finance; IMJ=Italian Ministry of Justice; $ISTAT$=Italian Institute of Statistics.

Table 5.6: Variables definition and sources (*Contd.)*

Variable	**Type**	**Definition**	**Source**
Medical Personnel	Continuous	Employed physicians and nurses at the local healthcare provider level	IMH
Number of Beds	Continuous	Number of beds at the local healthcare provider level	IMH
Open Tender	Dummy	Equal 1 if (and 0 otherwise): the tendering process is an ordinary procedure (i.e. open or restricted auction)	TED, ASPC and Telemat
Personnel	Continuous	Total personnel at the local healthcare provider level	IMH
Potential Bidders	Continuous	Number of insurers bidding out of all potential insurers represented by all the insurers already dealing with healthcare providers that can offer medical malpractice coverage	TED, ASPC and Telemat
Premium per medical personnel	Continuous	The medical malpractice insurance premium paid by healthcare providers normalized on the medical personnel of the healthcare providers	TED, ASPC and Telemat
Premium per personnel	Continuous	The medical malpractice insurance premium paid by healthcare providers normalized on the personnel of the healthcare providers	TED, ASPC and Telemat
Schedule	Continuous	Intensity of implementation of noneconomic damages schedules by the courts covering a same healthcare provider's territory	Molinari (several years)

Notes: TED= Tender Electronic Daily; IMH= Italian Ministry of Health; $ASPC$=Italian Authority for the Supervision of Public Contracts; $Telemat$=Private firm specialized in the management of information on public contracts and public procurement procedures; $glsimj$= Italian Ministry of Justice. $ISTAT$=Italian Institute of Statistics.

Table 4.15: Insurance Companies for Medical Malpractice Insurance

Insurer	**North**	**Center**	**South**
Allianz	X	X	
Amtrust Europe Limited	X	X	X
Aon SpA	X		
Assimoco SpA	X		X
BPB Assicurazioni	X		X
Carige Assicurazioni SpA	X		X
Chartis Europe SA			X
City Insurance		X	
Ergo Assicurazioni	X		
Europe Assistance SpA		X	X
Faro SpA	X	X	X
Fondiaria SAI	X	X	X
Generali	X	X	X
Gerling	X	X	X
IGI Insurance Company Limited	X	X	X
INA Assitalia	X		
Intermedia Broker		X	
Janua	X		
Lloyd's	X	X	X
Marsh SpA	X		
Navale Assicurazioni	X		X
Obe International Insurance LTD			X
QBE Insurance LTD	X	X	X
Reale Mutua Assicurazioni	X		X
Società Cattolica Assicurazioni	X	X	X
Trust Risk Group	X		
Unionvita			X
Unipol	X	X	X
Ventura Assicurazioni Sas	X		
Willis	X		
XL Insurance Company LTD	X	X	
Zurich Insurance Company	X	X	X

Notes: *Insurance Companies Medical Malpractice*=Insurance companies that have signed at least one medical malpractice insurance policy with at least one healthcare provider as a result of a public procurement procedure run in the period 2000-2010 in Italy.

Table 4.16: Insurance Companies contracting with Healthcare Providers (2000-2010)

Insurer	**North**	**Center**	**South**	**Insurer**	**North**	**Center**	**South**
Allianz	X	X		Intermedia Broker		X	
Amtrust Europe Limited	X	X	X	Janua	X		
Aon SpA	X	X	X	Lloyd's	X	X	X
Area Insurance	X			Marsh SpA	X	X	X
Assidea Srl		X	X	Navale Assicurazioni	X		X
Assimoco SpA	X		X	QBE Insurance LTD	X	X	X
AXA Assicurazioni SpA	X	X	X	Rasini Viganò SpA	X		
Aurora Assicurazioni		X	X	Reale Mutua Assicurazioni	X	X	X
BPB Assicurazioni	X		X	Riunione Adriatica di Sicurtà SpA		X	
Carige Assicurazioni SpA	X		X	Selecover	X		
Chartis Europe SA	X		X	Società Cattolica Assicurazioni	X	X	X
Chubb Insurance Company of Europe	X	X	X	Torrazzo Assicurazioni	X		
City Insurance		X		Trust Risk Group	X		
Europe Assistance SpA	X	X	X	UGF	X		X
Ergo Assicurazioni	X			Unionvita			X
Faro SpA	X	X	X	Unipol	X	X	X
Fondiaria SAI	X	X	X	Uniqua Protezione SpA	X		
Generali	X	X	X	Ventura Assicurazioni Sas	X		
Geras		X		W.R. Berkley Insurance Limited	X		
Gerling	X	X	X	Willis	X		X
GPA		X		XL Insurance Company LTD	X	X	
IGI Insurance Company Limited	X	X	X	Zurich Insurance Company	X	X	X
INA Assitalia	X			Kensington Risk Management			X

Notes: *Insurance Companies 2000-2010*= Insurance companies that have signed at least one insurance policy other than medical professional liability insurance with at least one healthcare provider as a result of a public procurement procedure run in the period 2000-2010 in Italy.

Table 4.17: Insurance Brokers

Broker	**North**	**Center**	**South**	**Broker**	**North**	**Center**	**South**
Adriatica			X	GPA SpA	X	X	X
Allbroker	X			IBO Gestione Rischi	X		
Alpha International Insurance Brokers		X		INSER SpA	X		
AMA Insurance Broker			X	Insurance Broker			X
Antares Srl			X	Interstudio		X	
Antonio Bergamasco			X	Ionica Meridionale Assicurazioni			X
Aon SpA	X	X	X	Ital Brokers SpA	X		
Area Insurance Brokers	X	X		Janua	X	X	
Arena Broker			X	Lertora F.lli	X		
Assidea Srl		X	X	Marsh SpA	X	X	X
Assidoge	X	X	X	Morass Insurance Brokers		X	
Assiprogetti SpA			X	Morganti Insurance Broker	X		
Assoconsulting			X	Paros International Broker			X
Brokerban SpA			X	Poseidon Insurance Brokers	X		
BSP		X		R&R Srl	X		
Cambiasso Risso & C. Assicurazioni	X			Rasini Viganó Assicurazioni	X	X	X
Central Broker Srl	X			Selecover	X		
Centro Assicurativo Internazionale Srl	X			Servizi Assicurativi Srl	X	X	
Consulbrokers SpA		X	X	SGR			X
Courtman Insurance Broker	X			Sicula Broker			X
EIB Srl		X		Taverna SpA		X	
Epoca Insurance Broker		X		Terbroker Srl			X
Euroservizi Srl	X			Urania Insurance Broker			X
Franco Labellate		X		Vira Assicurazioni Srl			X
GEA Broker			X	Willis	X	X	X
General Broker SpA	X	X	X				

Notes: *Insurance Brokers*= Insurance brokers providing brokerage services to Italian healthcare providers between 2000-2010 to carry out a procurement procedure to acquire medical malpractice insurance.

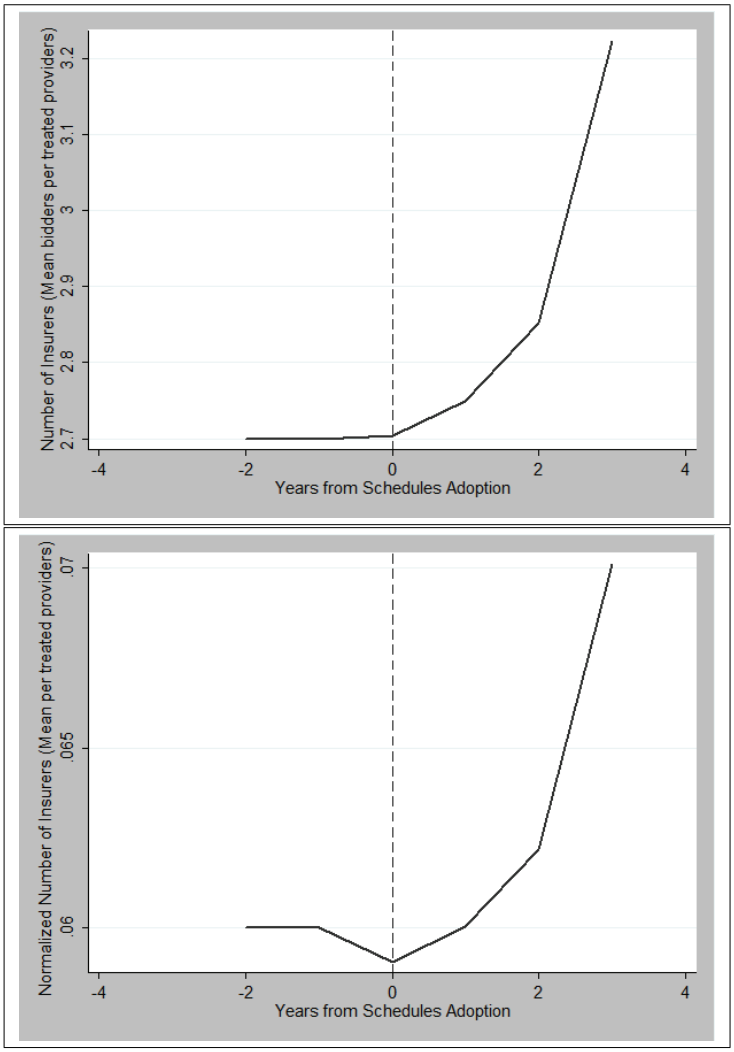
Table 4.18: Courthouses Distribution

Region	Courthouse	Region	Courthouse	Region	Courthouse
Abruzzo		**Emilia Romagna**		**Lombardy**	
	Avezzano		Bologna		Bergamo
	Chieti		Ferrara		Brescia
	L'Aquila		Forlì		Busto Arsizio
	Lanciano		Modena		Como
	Pescara		Parma		Crema
	Sulmona		Piacenza		Cremona
	Teramo		Ravenna		Lecco
	Vasto		Reggio nell'Emilia		Lodi
			Rimini		Mantova
					Milano
					Monza
					pavia
					Sondrio
					Varese
Basilicata		**Friuli Venezia Giulia**		**Marche**	
	Lagonegro		Gorizia		Ancona
	Matera		Pordedone		Ascoli Piceno
	Melfi		Tolmezzo		Camerino
	Potenza		Trieste		Fermo
			Udine		Macerata
					Pesaro
					Urbino
Calabria		**Lazio**		**Molise**	
	Castrovillari		Cassino		Campobasso
	Catanzaro		Civitavecchia		Isernia
	Cosenza		Frosinone		Larino
	Crotone		Latina		
	Lamezia Terme		Rieti		
	Locri		Roma		
	Palmi		Tivoli		
	Paola		Velletri		
	Reggio di Calabria				
	Rossano				
	Vibo Valentia				
Campania		**Liguria**		**Piedmont**	
	Ariano Irpino		Genove		Alba
	Avellino		Imperia		Alessandria
	Benevento		La Spezia		Asti
	Cassino		Sanremo		Biella
	Napoli		Savona		Casale Monferrato
	Nocera Inferiore				Cuneo
	Nola				Ivrea
	Sala Consilina				Mondovì
	Salerno				Novara
	Sant'Angelo dei Lombardi				Pinerolo
	Santa Maria Capua Vetere				Saluzzo
	Torre Annunziata				Torino
	Vallo della Lucania				Tortona
					Verbania
					Vercelli

Table 4.18: Courthouses Distribution (cont'd)

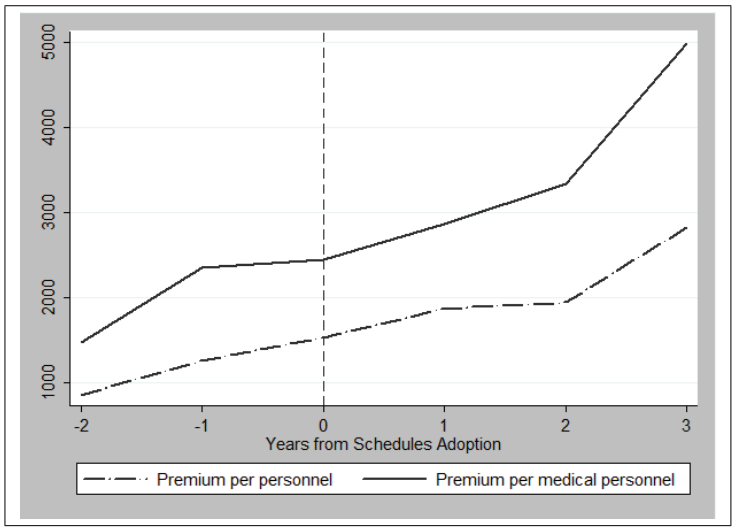
Regions	Courthouse	Regions	Courthouse	Regions	Courthouse
Puglia		**Trentino Alto Adige**		**Veneto**	
	Bari		Bolzano		Bassano del Grappa
	Brindisi		Rovereto		Belluno
	Foggia		Trento		Padova
	Lecce				Rovigo
	Lucera				Treviso
	Taranto				Venezia
	Trani				Verona
					Vicenza
Sardinia		**Tuscany**		**Valle d'Aosta**	
	Cagliari		Arezzo		Aosta
	Lanusei		Firenze		
	Nuoro		Grosseto		
	Oristano		Livorno		
	Sassari		Lucca		
	Tempo Pausania		Massa		
			Montepulciano		
			Pisa		
			Pistoia		
			Prato		
			Siena		
Sicily		**Umbria**			
	Agrigento		Orvieto		
	Barcellona Pozzo di Gotto		Perugia		
	Caltagirone		Spoleto		
	Caltanissetta		Terni		
	Catania				
	Enna				
	Gela				
	Marsala				
	Messina				
	Mistretta				
	Modica				
	Nicosia				
	Palermo				
	Patti				
	Ragusa				
	Sciacca				
	Siracusa				
	Termini Imerese				
	Trapani				

Figure 4.8: Bidders: Trend of the Treated



Notes: On the vertical axis: the number of insurers submitting an offer in a tender for medical malpractice insurance (upper part) and the number of insurers out of the potential number of insurers dealing with healthcare providers and capable of offering malpractice coverage (lower part). On the horizontal axis: years from schedules adoption.

Figure 4.9: Paid Premiums: Trend of the Treated



Notes: On the vertical axis: Paid Premiums normalized per personnel and medical personnel. On the horizontal axis: years from schedules adoption.

4.8 Appendix B: The Award of Public Service Contracts in Italy

The Italian legislation regulating the award of public contracts has experienced a number of reforms over the last ten years, in response, among others, to the introduction of the EU Directives 2004/18/EC and 2004/17/EC and their successive amendments and corrections.[68]

Specifically, until the Seventies the award of public service contracts was governed by the State records legislation (R.D. 2440/1923 and R.D. 827/1924) and its related modifications. In 1995 a specific regulation was introduced with the Legislative Decree 157, 17 March 1995, implementing the European Directive 92/50/CEE. This Decree remained in force until 2006 when it was replaced by the existing legislation, that is, the Legislative Decree 163, 12 April 2006 (known as the Public Procurement Code) also regulating the procurement of public work contracts and public supply contracts.

Under Article 10(3) of the Public Procurement Code, public service contracts are defined as "*public contracts other than public works or supply contracts having as their object the provision of services referred to in Annex II.*" This annex is further divided into two sections, A and B. This distinction is particularly relevant since the award of the services contained in Annex IIA is entirely regulated by the provisions of the Public Procurement Code. Conversely, the Legislative Decree 157 is only partially applied with respect to the acquisition of the services listed in section B.

The Public Procurement Code also envisages the application of different rules to public contracts on the basis of their value distinguishing between those contracts that are of Community interest and those that are not. To be considered of Community interest, a contract has to have a value[69] exclusive of value-added tax (VAT) greater than the pre-established thresholds that the European Commission computes every two years.[70]

As for the insurance service of this study, medical professional liability insurance belongs to the category of the financial services listed in Annex IIA and the value of contracts for this type of insurance coverage always substantially exceeds the EU thresholds. Consequently, the provisions applicable to the award of medical malpractice liability insurance are those

[68]The legislation governing the award of public service contracts has undergone minor changes compared to those experienced by the rules applicable to the procurement of public works contracts and public supply contracts. The awarding procedures and their functioning have remained essentially unchanged. In fact, the main modifications have regarded the requirements that a contract has to meet in order to be considered of community interest. However, this has no implication in case of medical malpractice liability insurance contracts and, therefore, no impact on the present study.

[69]To calculate the estimated value of a public contract, the contracting authority shall take into account the estimated total amount payable, including any form of option and any renewal of the contract. Furthermore, the subdivision of a contract to prevent its coming within the scope of the Public Procurement Code is forbidden. In particular, with respect to insurance services, the value, which should be taken as a basis for the calculation of the estimated value of the contract, shall be the premium payable and other form of remunerations. See Art. 29 of the Public Procurement Code.

[70]For the period from 1 January 2010 until 31 December 2011, the value of the thresholds for public service contracts amounts to 193.000 euros. In addition, as the contracts of interest for this study are basically always worth over 200.000 euros, the changes of this threshold occurred over time do not affect the study itself.

foreseen by the Public Procurement Code for contracts of community interest. The present section, therefore, focuses only on the study of these norms and of their application.[71]

4.8.1 Provisions on Advertising and Transparency

Under the principles of transparency and advertising, contracting authorities have the duty to disclose any procurement procedure they intend to carry out and any document related to it. At the same time, the applicants have the right to accessible procedures. The purpose of these obligations is to ensure that all potential interested operators can be informed about the procurement procedures. The provisions for advertising and transparency are also meant to assure the general principle of equal treatment, avoiding the possibility that national firms could be unfairly favored. In fact, the publication in the national press cannot occur before the release in the Official Journal of the European Union and cannot contain additional information.[72]

In particular, awarding agencies are required to disclose: (i) their intention to entrust a specific contract by releasing a prior information notice, where applicable,[73] and a call for tender; (ii) the final decision on the award of a tender, reporting even the possible grounds for not awarding it, by means of an award notice.[74] The publication of both the contract notice and the award notice is compulsory in the case of ordinary procedures, negotiations with prior publication of a call for tender, and competitive dialogues. As a result, procurement agencies have the obligation to release a prior information notice only when they want to shorten the time limits for receiving offers. All these documents are published in both the Italian Official Journal (*Gazzetta Ufficiale della Repubblica Italiana*) and the Official Journal of the European Union.[75]

For reasons of transparency, all these documents shall be drawn up in accordance to standard Commission forms, hence they shall contain detailed and standardized information.[76] Specifically, the information listed in the prior information notice concerns, for instance, the name and contact details of the procurement authority, the total value of the proposed contracts and the estimated date for initiating the awarding procedure. In addition, the call for tender must include information such as the identity and contact details of the awarding entity, a description of the object of the contract, the adopted tendering procedure, the length of

[71] However, the difference between the rules applicable respectively to contracts below and above the pre-established thresholds is quite limited. Specifically, in the case of contracts that are not of Community interest, some obligations for the public institutions are simplified (such as those regarding information and transparency) and the timing of the award process is shortened. For further details, see Presidenza del Consiglio dei Ministri (2010) and Bertuzzi and Fumarola (2011).

[72] Art. 66 of the Public Procurement Code.

[73] Art. 63, para 4, of the Public Procurement Code.

[74] Artt. 63- 65 of the Public Procurement Code.

[75] Specifically, they are published in the Supplement to the Official Journal of the European Union dedicated to European public procurement, which also has an online version called Tender Electronic Daily (TED). On subscription, the TED is also available in CD-ROM. Moreover, the most important information is released in all the European languages and the translation is at the expenses of the European Union itself.

[76] Annex IXA of the Public Procurement Code.

the contract, any deposit and guarantees required, the technical and economic requirements.

Finally, the award notice shall provide information regarding the number of tenders received, the identity and contact details of the successful economic operators, and the identity of the body responsible for appeal and, where appropriate, mediation procedures.[77] Furthermore, with regards to the award notice, an additional obligation in terms of publicity foresees that, at the request of the party concerned, procurement agencies shall as soon as possible inform: (i) any rejected applicant of the reasons for the exclusion of her application; (ii) any unsuccessful bidder of the reasons for rejecting her offer; and (iii) any bidder, who has presented an admissible offer, of the relative advantages of the chosen bid, and of the name of the winner.[78]

4.8.2 Suitability of Applicants

Under the Public Procurement Code, firms shall comply with general conditions to be admitted to a tendering process. These conditions are aimed at assessing the suitability of applicants and concern their economic and financial capacity, as well as their technical and professional knowledge or abilities.

As a general rule, any economic operator is excluded from taking part in a procurement procedure when she has been found guilty of being corrupt or involved in a criminal organization, of fraud or money laundering. Specifically, any candidate may not be allowed to participate in a tendering process when that candidate: (i) is bankrupt, is being wound up or has suspended business activities; (ii) is subject to proceedings for a declaration of bankruptcy or the court is administering her affairs; (iii) has been convicted of any offense concerning her professional conduct; (iv) has been found guilty of grave professional misconduct; (v) has not complied with the obligations related to social security contributions or taxes; (vi) has provided a false declaration to the procurement agency.[79]

Moreover, applicants may be required by awarding authorities to provide any document testifying their professional conduct and/or economic and financial situation. As proof of the economic and financial standing of candidates, procurement agencies may require one or more of the following references: (i) appropriate bank statements; (ii) a statement of the candidate's overall turnover and, where appropriate, of turnover in the area covered by the contract for a maximum of the last three financial years; and (iii) the presentation of balance-sheets or extracts from the balance-sheets for those candidates that are obliged to publish the balance-sheet under the law of the country in which they are established.[80]

As for the assessment of the technical and professional abilities, economic operators may be required to submit one or more of the following means: (i) a list of the main services delivered over the last three years, with sums, dates and recipients involved; (ii) information on the technicians or technical bodies involved; (iii) indication of the candidate's study and research facilities, and of the technical facilities of the service provider; (iv) description of the

[77] Annex IXA of the Public Procurement Code.
[78] Art. 79, para 2, of the Public Procurement Code.
[79] Art. 38 of the Public Procurement Code.
[80] Art. 41 of the Public Procurement Code.

educational and professional qualifications of the service provider or those of its managerial staff; (v) only in appropriate circumstances, indication of the environmental management system of the applicant; (vi) statement of the manpower of the service provider and/or applicants and the number of managerial staff for the last three years; (vii) statement of the technical equipment, plants and tools the service provider and/or applicant can use for delivering the service; (viii) indication of the proportion of the contract the applicant is possibly willing to subcontract.[81]

4.8.3 Awarding Procedures

The Italian regulation foresees four main mechanisms that public institutions can adopt in order to select private contractors: open procedures or open auctions (*procedure aperte*); restricted auctions or restricted procedures (*procedure ristrette*); negotiated procedures (*procedure negoziate*); and competitive dialogue (*dialogo competitivo*).[82]

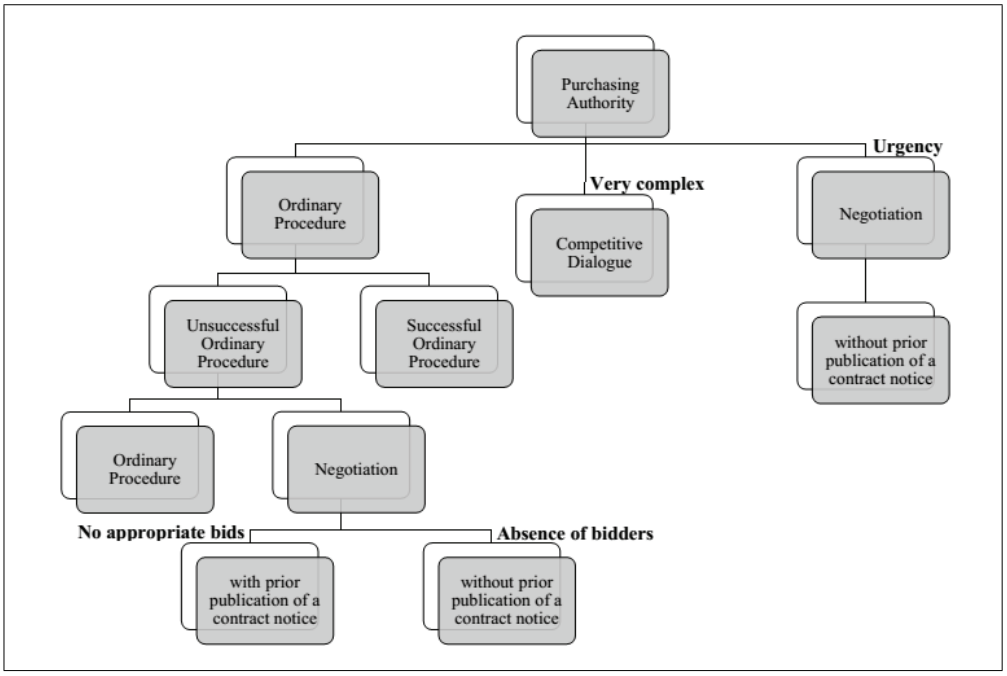
The first two types of procurement mechanisms are defined as ordinary procedures and characterized by limited discretionary power of the awarding authority in the choice of contractors. Ordinary procedures assume the capability of the contracting entity of defining, from the beginning, the subject of the contract and its technical requirements. Public institutions are, therefore, expected to provide bidders with all the necessary information to present immediately accurate, non-renegotiable bids.

Conversely, negotiated procedures and the competitive dialogue are basically exceptional mechanisms. The former entails a significant discretionary power of the procurement agency and can be adopted only under specific circumstances such as those related to urgency or lack of appropriate bids or applicants. The latter can be run only in case of complex contracts. Namely, when the contracting authority is not able to identify by itself the technical solutions to meet its needs or is not capable of stating precisely the legal and/or financial make-up of the project.

In choosing which procedure to apply, public institutions must take into account the different nature of the awarding mechanisms at their disposal. Contracts should be awarded preferentially through an ordinary procedure, while the use of the competitive dialogue and negotiated procedures is admissible only in the cases explicitly stated by the law (Figure 4.10). However, even when allowed, the adoption of an exceptional procedure is optional, as the contracting authority can, but has no obligation to resort to it.

[81] Art. 42 of the Public Procurement Code.
[82] Art. 54 of the Public Procurement Code.

Figure 4.10: How to Chose the Procurement Procedure to Apply



Ordinary Procedures

Open procedures coincide with sealed-bid auctions in which the contracting authority releases a call for tender, providing a precise description of the subject of the contract. This type of awarding mechanism is supposed to assure the highest possible level of competition in the tendering process since all interested parties can present an offer. However, these economic operators cannot propose modifications to the submitted bids in a later stage of the tender. In addition, applicants are only required to satisfy basic competence requisites for their economic, financial and technical capacities to deliver the service being procured.[83] The fulfillment of these requisites established by the procurement agency is assessed simultaneously at the evaluation of bids, thus this type of procedures takes place in one single phase. Unlike open auctions, restricted procedures consist of two stages. First, the tender has to be announced in advanced by the contracting authority, which also has to provide all necessary information about the conditions that bidders are requested to meet in order to be admitted to the tendering process. In the subsequent phase, the procurement agency invites

[83]See, Vellez (2011).

to the tender all those applicants who have expressed their interest in participating and that satisfy the requirements listed in the contract notice. At the same time, it gives them all the necessary information on how to submit a bid. Consequently, private operators interested in participating in a restricted auction have first to inform the contracting authority about their will to present an offer, but they can actually submit their offer only once the awarding agency has verified that they satisfy the requirements set in the call and has invited them to take part in the auction.

In the past, restricted and open procedures clearly differed because the former foresaw the possibility for the procurement authority to limit the number of bidders.[84] Specifically, the awarding agency had the power to invite to the tender only a limited number of operators chosen among those who expressed their interest to participate in the auction. However, to exercise this power the contracting authority had the obligation to expressly state in the contract notice its intention to apply this option. The existing legislation regulating the award of public service contracts no longer envisages this possibility and it eliminates any discretionary power of contracting authorities in admitting applicants to the restricted procedure. All those private operators, that have applied to a restricted auction and have proven to meet the qualification requirements contained in the call for tender, must be invited to present an offer.

Nowadays, apart from the number of stages foreseen, there is no substantial difference between open and restricted auctions. In both open and restricted auctions, all interested and qualified economic operators may present an offer. Therefore, both types of ordinary procedures promote equal access for all qualified firms to the public procurement market and its opportunities. The equal access for all qualified operators combined with the procedural pattern of these procedures (e.g. the ban to modify the bids once they have been submitted) also limits the discretionary power of administrations to the benefit of the equal treatment of applicants and the accountability of the process. Moreover, the opening of the participation to all qualified operators should also ensure the maximum possible number of applicants enhancing the competitiveness of suppliers. On the one hand, the room for collusion among firms should decrease since a higher number of bidders makes it more difficult for undertakings to collude. On the other hand, it should be more likely for awarding authorities to benefit from the best firms operating in the market, improving value for money.[85]

Given these characteristics, ordinary procedures are considered to be the most effective awarding method to pursue the key general principles at the heart of the procurement system. For this reason, procurement agencies can always adopt either open or restricted procedures and the Italian legislation does not contemplate situations in which one type of auction has to be preferred to the other. The Public Procurement Code provides only a preferential, thus non-binding, criterion to decide which ordinary mechanism should be adopted.[86]

[84] The power to limit the number of applicants was envisaged in the Legislative Decree 157, 17 March 1995. However, Article 22, para 2, specified that the number of bidders, that the contracting authority invites to submit an offer, could not be less than five. The database built for this study takes into account this option for the restricted auctions that have been published before 2006.

[85] Arrowsmith et al. (2010)

[86] Art. 55, para 2, of the Public Procurement Code.

Indeed, contracting authorities should apply restricted procedures preferably when the subject of the contract is the mere execution of a service or when the award criterion is the most economically advantageous tender. Under this criterion, the awarding authority is required to clearly define the parameters taken into account to select the private contractors. Thus, a restricted procedure seems better structured to deal with the greater complexity entailed by this criterion since it takes place into two distinct phases. On the contrary, being a more streamlined procedure, an open auction seems to be preferable when the award criterion is the lowest price. Under both open and restricted auctions, the awarding agency has the additional power not to award the service procured when only one or two appropriate bids have been submitted.[87] However, to be exercisable, this option has to be stated in the contract notice.

Negotiated Procedures

Negotiations are those awarding procedures where the procurement agency chooses the economic operators to contact and discusses the subject and terms of the contract with them.[88] This type of tendering process allows public institutions to contact potential private contractors before awarding the contract and constitutes a derogation of the general prohibition on renegotiating bids. Administrations enjoy a much wider discretion compared to the case of ordinary procedures, thus they have greater chances to favor a specific firm, undermining the general principles of equal treatment and transparency. Given these peculiarities, negotiated procedures are considered an exceptional procurement mechanism whose adoption is admissible, but not compulsory, only under specific circumstances, such as in case of urgency or lack of appropriate bids or applicants.[89]

Depending on the type of information obligations imposed on the awarding agency, that is, on the greater or lesser discretionary power conferred to the administration, the Public Procurement Code differentiates between two different negotiated procedures:[90]

- negotiated procedures with prior publication of a contract notice. The adoption of this type of negotiations for the award of public service contracts is justified only when, after the completion of an open or restricted auction or of a competitive dialogue, all the submitted bids are irregular or unacceptable. However, this is admissible only insofar as this new negotiated procedure does not substantially modify the original terms of the contract.[91] In case of particularly difficult or complex services, these procedures allow the awarding agency to limit the number of economic operators to negotiate with. Nevertheless, no less than six applicants have to be invited to the tender and the procurement authority has to expressly state in the contract notice: (i) its intention to

[87] Art. 55, para 4, of the Public Procurement Code.
[88] Art. 3, para 40, of the Public Procurement Code.
[89] Art. 54, para 4, of the Public Procurement Code.
[90] See, Decarolis et al. (2010).
[91] Art. 56 of the Public Procurement Code.

exercise this power, (ii) the minimum number of bidders it wants to contact, and (iii) the criteria for the choice of the economic operators to invite;[92]

- negotiated procedures without prior publication of a call for tender. Clearly this type of negotiations entails an even higher risk of discrimination of economic operators. The fact that no notice is required reduces transparency and monitoring objectivity, increasing the discretionary power of administrations. Consequently, the possibilities of applying this procurement mechanism are strictly limited and foreseen in the Public Procurement Code. Specifically, this procedure is admissible only under the following conditions: i) when no bids have been submitted in response to an ordinary procedure; ii) when, due to artistic or technical reasons, or because of reasons related to the protection of exclusive rights, the contract may be awarded only to a specific private operator; iii) in case of extreme urgency due to unforeseeable circumstances; iv) when the contract follows the completion of a design contest and should be entrusted to the winner of the contest itself; v) when additional services, which are not envisaged in the original project, have become necessary due to unforeseen events and if their value does not exceed 50% of the amount of the initial contract; and vi) in the case of new services consisting in the repetition of similar services that have already been awarded for a maximum of 3 years.[93]

The Competitive Dialogue

Competitive dialogue is one of the major changes introduced by the Public Procurement Code in response to the implementation of the European Directive 2004/18/EC. The aim of this new mechanism is to provide "*a flexible procedure [...] which preserves not only competition between economic operators but also the need for the contracting authorities to discuss all aspects of the contract with each candidate.*"[94]

Its adoption is admissible only in the cases expressly provided for in Article 58 of the Public Procurement Code. Specifically, the subject of the tender has to entail a high level of complexity that makes open or restricted procedures impracticable.[95] This occurs (i) when the contracting authority is not able to identify by itself the technical solutions to meet its needs; (ii) when it is not capable to state precisely the legal and/or financial make-up of a project; or (iii) when, due to objective reasons outside its responsibility, it does not have any study that identifies and quantifies its needs or the means necessary to achieve its objectives.

Competitive dialogue aims at enabling awarding entities to determine the solution best suited to their necessities when these needs are very complex and/or alternative results can be achieved and desired. At the same time, this attracts, as potential bidders, as many private operators as possible. Since it does not identify a single possible solution, economic

[92] See Art. 62 of the Public Procurement Code.
[93] See Art. 57 of the Public Procurement Code.
[94] Directive 2004/18/EC.
[95] To resort to a competitive dialogue, the procurement agency must provide reasons supporting this status of complexity: see Art. 58 of the Public Procurement Code.

operators have more discretionary room to propose and develop a solution according to their specific technical and economical capacity.

According to ordinary procedures, as well as negotiated procedures, a contracting entity has to identify the procurement specifications, on whose base applicants make their bids. On the contrary, the competitive dialogue does not require detailed tender specifications, but rather a document stating the necessities and requisites of the authority. On the grounds of this document, the awarding entity opens a dialogue with each applicant about which solution might satisfy its necessities. To counteract this wider range of discussion between applicants and the contracting authority and to prevent administrations from abusing it, the competitive dialogue is characterized by a strict procedural structure. (i.e. the procedural pattern and the form of its different phases are stated precisely and in more detail compared to the case of ordinary and negotiated procedures).

Specifically, this procurement mechanism consists of three phases. First, the administration selects the economic operators to invite to the tender, thus it releases a contract notice including its needs and objectives.[96] Since, the only adoptable award criterion, in the case of competitive dialogue, is the economically most advantageous tender, the notice contains also the criteria for evaluating the bids. It also includes the requirements to be admitted to the tender and the time limit within which interested parties may submit their participation requests. If the awarding agency decides to limit the number of economic operators to be invited to the tender, the notice should also contain the selection criteria it intends to use, the minimum number of applicants it intends to invite (in any case no less than three) and, where appropriate, the maximum number. Finally, the contract notice also has to report the intention, if this is the case, of the procurement agency to exercise the power laid down in Article 58(8) to gradually reduce the number of solutions to be discussed in the following phase (the so-called dialogue phase).

Second, the procurement agency, simultaneously and in writing, invites the selected economic operators to conduct a dialogue. The Public Procurement Code does not provide any specific and detailed provision in relation to the conduct of the dialogue, but it only offers some general rules. In particular, the dialogue should be carried out individually with each applicant and the awarding authority has to ensure the equal treatment of all applicants and protect the confidentiality of the information exchanged. Furthermore, the legislation does not even provide any information regarding the timing of this phase. Hence, the administration has the discretionary power to decide that the discussion has to take place in successive stages in order to reduce the number of solutions to discuss. The dialogue continues until a solution has been identified. However, this phase might also have a negative outcome if the administration considers that none of the solutions proposed satisfies properly its needs or objectives.

Third, once the contracting authority has identified an appropriate solution, the dialogue is declared concluded. At the same time, participants are informed and asked to submit their final offers on the basis of the solution (or possible solutions) presented and specified during

[96]The procurement authority can also specify its needs and objectives in a descriptive document attached to the contract notice itself.

the dialogue phase. The final bids may be further specified, but without modifying the basic features of the contract, and are then assessed based on the most economically advantageous tender criterion.

In conclusion, the competitive dialogue may be seen as a particular procurement mechanism which shares features with both restricted auctions and negotiations with prior publication of a call for tender. This procedure mainly differs from restricted auctions because the contracting agency is authorized to discuss every aspect of the contract. In turn, the competitive dialogue also differs from negotiated procedures because, essentially, the discussion is concentrated and limited within a specific phase of the procedure.

4.8.4 Contract Award Criteria

In awarding its public contracts, a contracting authority can apply as award criterion either 'the lowest price' criterion or 'the most economically advantageous tender' one and it is obliged to specify in the call for tender the criterion that it has decided to adopt.[97]

According to the lowest price criterion, the evaluation of the bids submitted is based exclusively on the price offered, thus the applicant providing the lowest price wins the tender. By adopting this criterion, the procurement agency is required to define in detail the technical and qualitative characteristics of the procured service. Conversely, where the contract is awarded to the most economically advantageous tender, several other parameters besides price are taken into consideration (e.g. quality, technical assistance, technical merit and environmental characteristics) and the procurement agency has to specify both the parameters adopted and the relative weighting assigned to each of them.[98] Consequently, the bids submitted by applicants include an economic section concerning the price at which private firms are willing to provide the service and a technical section related to the procedures for the completion of the contract. In particular, the technical part is defined by the applicants on the basis of the minimum characteristics of the service procured that the awarding authority has to identify in the call for tender. Each section of the offers is then evaluated and receives a score on the grounds of the various parameters chosen by the procurement agency and the contract is entrusted to the applicant whose offer has obtained the highest overall score.

Clearly, this second type of awarding criterion is more complex and entails greater discretion for the purchasing authority in relation to the identification of both the additional selection criteria besides price and the way in which these parameters are weighted. Its application allows contracting agencies to adapt the evaluation of bids to their specific needs, which do not necessarily and primarily coincide with paying the lowest price. It can also be useful when auctioneers still have to identify the best solution according to their necessities and, therefore, they might benefit from receiving alternative proposals from applicants.

However, contracting entities may take advantage of the wider discretionary power to discriminate tenderers, favoring specific operators and pursuing private objectives. Undesirable social outcomes may also be a consequence of the improper use of this criterion by public

[97] Art. 81 of the Public Procurement Code.
[98] Art. 83 of the Public Procurement Code.

bodies, whose officials can lack the experience or the skills to properly exercise this criterion. Nevertheless, contracting authorities can freely choose among these two different awarding criteria without restrictions.

The decision of which criterion to apply has to be performed respecting the principles of competition, transparency, non-discrimination and equal opportunities, and the chosen criterion should be the most appropriate one with respect to the characteristics and the type of service procured. The lowest price is preferable when the subject of the contract is standardized and well-defined. If the qualitative characteristics and the procedures for the provision of the service are well identified, the services offered by different suppliers do not vary that much in terms of nature and quality and the price plays a more important role. On the contrary, the most economically advantageous tender criterion is desirable for non-standardized contracts where quality and other characteristics of the procured object also matter and where the awarding authority wants to receive different technical offers in order to choose the optimal solution to its needs.[99] In these circumstances, the best allocation of public resources may not coincide with the lowest price, but rather with the best combination of price and quality.

Regardless of the criterion applied in awarding the contract, the procurement agency has to verify that the price offered by the applicants could be considered 'reliable' on the basis of the norms regulating abnormal tenders. An anomalous bid is defined as a bid that, due to its very low price, arouses concerns about the actual ability of the applicant to perform the contract, while respecting the terms offered. Under this hypothesis, there are two possible negative scenarios: (i) the applicant might not meet the contract requirements (e.g. the applicant may provide the object of the contract at a lower quality); (ii) the applicant might pursue either a renegotiation of the contract once the tender is awarded or additional payments while performing the contract. However, a very low price could be justified by other objective reasons, such as, for instance, the fact that the applicant could operate very efficiently thanks to new method of productions. Consequently, the Public Procurement Code foresees a set of instruments to assess abnormally low bids.[100]

Specifically, it defines a threshold of 'presumed anomaly' and the price that falls below this threshold is considered an anomalous bid.[101] Once an offer is identified as anomalous, the contracting authority has to perform a congruity check during which the interested parties

[99]For further details on public sector contracts in Italy, see Presidenza del Consiglio dei Ministri (2010) and Decarolis et al. (2010).

[100]Artt. 86-89 of the Public Procurement Code.

[101]When the award criterion is the lowest price, this threshold is computed as "*the arithmetic mean of the percentage discounts of all the offers admitted, excluding the highest ten percent and lowest ten percent of offers (rounded to the next highest integer), increased by the mean arithmetic deviation of the discount percentages that exceed the aforementioned mean.*" See, Decarolis et al. (2010), p. 5. Nevertheless, if the contracting authority has received less than five offers, this criterion no longer finds application and the assessment of abnormally low tenders is based on the best market price, when this can be observed, or on specific elements. Conversely, when the award criterion is the most economically advantageous tender, a bid is considered anomalous if "*both the scores relating to the price and the sum of scores relating to the other assessment elements are equal to or greater than four-fifths of the corresponding maximum scores stated in the call for tender.*" See, Decarolis et al. (2010), p.5 .

are given a hearing. Finally, as a general principle, the procurement agency can decide not to award the contract if no offer results to be appropriate with respect to the object procured.[102] However, the contracting authority is always required to evaluate the bids received and to provide appropriate justifications for not awarding the contract.

4.8.5 Time Limits

In fixing the time limits for the receipt of the participation requests and offers, procurement agencies shall take into due consideration the complexity of the procured contract and the time necessary to draw up bids. In any case, they cannot opt for time limits shorter than the minimum period set by the Public Procurement Code.[103] These provisions on time limits are aimed at preventing administrations from making the participation for firms more difficult. In particular, an unreasonably short time frame might constitute a relevant obstacle for foreign operators (e.g. foreign firms may need time to provide certified translations of official documents or to translate their bid).

Specifically, in case of an open auction, the minimum time limit for the receipt of offers is 52 days from the date on which the call for tender has been published. When a prior information notice has been released, this time limit may be shortened to 36 days, but under no circumstances it can be less than 22 days.[104] In a restricted procedure, once that the contract notice has been published, candidates have 37 days to send their participation requests to the awarding authority. Afterwards, the applicants who have successfully proved that they meet the participation requirements are, simultaneously and in writing, invited to submit their offers. These tenders shall be received in 40 days from the date on which the invitation is sent.

As it happens for open procedures, when the procurement authorities have published a prior information notice, this time limit may be lowered to 36 days, but in no case it can be less than 22 days. Moreover, under circumstances of extreme urgency, the minimum time limit may be further cut to 15 days (10 day if the call for tender is sent electronically) for the receipt of participation requests and to 10 days for the receipt of bids.[105] In these hypotheses, a restricted auction is also called an accelerated restricted procedure. As for negotiations with prior publication of a call for tender, the minimum time limit for the reception of participation requests shall be 37 days from the publication date of the contract notice. If there are reasons of urgency, the awarding agency may use an accelerated negotiated procedure. Therefore, it may lower the minimum time limit to 15 days, which can be further reduced to 10 if the contract notice is sent electronically.

As a general rule, when contracting authorities decide to carry out either an accelerated negotiation or an accelerated restricted procedure, they shall provide appropriate justifications for their choice in the contract notice. Finally, in the case of a competitive dialogue,

[102] Art. 81, para 3, of the Public Procurement Code.
[103] Art. 70 of the Public Procurement Code.
[104] Art. 70, para 2 and 7, of the Public Procurement Code.
[105] Art. 70, para 4, 7 and 11, of the Public Procurement Code

participation requests have to be received in no more than 37 days from the date on which the call for tender was released.

4.8.6 Brokerage Services

In carrying out tenders, the public administration is often supported by a so-called broker, that is a private operator acting on behalf of the contracting authority itself.[106]

Procurement agencies are supposed to make use of this type of intermediary because of the brokers' professional experience and independence. In fact, brokers assume a crucial role during tenders, as well as once the private contractor has been selected. In particular, they may be in charge of one or more of the following tasks: (i) risks identification and assessment; (ii) consulting in risk management; (iii) analysis of the needs, in terms of insurance coverage, of the awarding entity and drafting of the technical specifications; (iv) assistance in running the tendering process to award the contract; and (v) assistance in the management of the insurance coverage.[107] [108]

Contracting authorities, who are assisted by a broker, are obliged to disclose this information in the contract notice. They also have the obligation to provide all the information regarding how much they pay for these brokerage services and how this remuneration is computed.[109] By examining the calls for tender collected and the technical specifications available, the standard remuneration of brokers can be placed in a range between 5 and 14 % of the value of the proposed medical malpractice liability insurance.

[106]Even in the case of the acquisition of brokerage services, health organizations are obliged by law to resort to public procurement.

[107]Buzzacchi and Gracis (2008).

[108]Specifically, brokers may be responsible for managing the claims and, more generally, they may be the representative of the insured healthcare providers.

[109]The remuneration of the broker is usually included in the value of the procured contract. For more information on brokers' remuneration, see Associazione Italiana Broker di Assicurazione e Riassicurazione (2008), pp. 4-19.

Chapter 5

Courts, Scheduled Damages and Hospital Activity

5.1 Introduction

The present chapter extends and complements the analysis developed in the previous one. After having investigated the impact of limiting noneconomic damages on insurance companies, it is interesting to examine the effects of this policy on the behavior of healthcare providers. The understanding of the possible relation between malpractice pressure and the levels and composition of medical activity in the public sector is relevant, especially, in a policy perspective. In fact, such a relation ultimately impacts on how the healthcare system meets the medical needs of the population with possible consequences on healthcare expenditures and on the fairness of the public provision of medical care.

Limiting noneconomic damages is traditionally expected to affect the behavior of doctors through the impact that it exerts on one of the main determinants of malpractice pressure: the likelihood that injured parties file a claim.[1] Some studies have provided opposite findings with respect to claim frequency.[2] Still, when we consider only the impact of the reference

[1] A number of studies recognize the impact of caps on the magnitude of claims as one of the main driver of doctors' behavior (Kessler and McClellan, 2002a and 2002b). Whilst several others deny this conclusion pointing out that malpractice litigation usually does not entail a significant financial risk for physicians since doctors are usually covered against losses in malpractice trials (Frakes, 2012a) and the final compensations awarded are rarely higher than the amount doctors are insured for (Silver et al. 2007, Hyman et al. 2007, and Vidmar 2009). Anyway, regardless of its possible financial implications, medical liability (i.e. the probability of being sued) plays a significant role in shaping the behavior of doctors due to the significant non-monetary (i.e. physiological and time) costs entailed by legal proceedings (Currie and MacLeod, 2008). In addition, malpractice litigation foresees many costs that are not generally covered by insurance and, more important, it constitutes a real threat to the reputation of healthcare professionals (Quinn 1998, and Currie and MacLeod 2008).

[2] As discusses in Section 3.6.2, Waters et al. (2007) and Donohue and Ho (2007) find no evidence of a relationship between noneconomic damages caps and the frequency of claims. Nevertheless, these null-findings are consistent with the potential contrasting effects that limiting noneconomic damages may have in relation to physicians and injured parties. On the one hand, lower compensations may induce physicians

policy on victims' decisions, the conventional wisdom waves in favor of the idea that capping noneconomic damages is likely to discourage injured parties from filing a claim as caps should limit the average compensation per claim.[3] This is particularly important for doctors, who are concerned about being involved in a legal dispute because of all the material and immaterial costs entailed by litigation.

However, variations in malpractice pressure are not caused exclusively by the adoption of tort reforms and the present chapter aims at investigating also the role of judicial performance, measured in terms of civil backlog. The basic intuition is that a poor performing judicial system is likely to discourage victims from filing claims as the trials processing time is longer and more uncertain. If limiting noneconomic damages alone is generally expected to reduce the probability of malpractice litigation, the impact of the introduction of caps conditional on the performance of its enforcing mechanism is not straightforward, but it will rather be the combination of the effects of both factors (i.e. the implementation of schedules of noneconomic damages and judicial performance).[4] Therefore, the actual impact is an empirical issue that depends on the intensity of these two forces and on whether they contrast or intensify each other. Despite the possible consequences of judicial efficiency, this element has been substantially disregarded so far by the literature on defensive medicine. In addition, even though a number of empirical contributions have investigated the specific link between noneconomic damages caps and doctors' defensive behavior,[5] schedules of noneconomic damages have attracted much less attention. As a result, the potential impact of the reference policy on the conduct of physicians remains inconclusive.[6]

The present chapter aims precisely at making up for these two shortcomings by examining

to decrease – even unintentionally – their level of precaution. On the other hand, injured parties may be discouraged from filing claims. Therefore, as discussed by Donohue and Ho (2007), a null effect of caps on claim frequency can be simply the result of cross-cutting effects on both clinicians and victims. The frequency of lawsuits, therefore, is determined by the reactions of both physicians and patients to the introduction of caps. On the contrary, we are considering only the impact of limiting noneconomic damages on the decisions of victims to initiate a legal dispute.

[3]See, for instance, Avraham (2007). The actual impact of caps/schedules on victims' decisions depends on the level at which these ceilings are set.

[4]Hereafter, when we mention schedules we refer to schedules of noneconomic damages, unless differently stated.

[5]See, Section 3.6.5. For instance, Kessler and McClellan (1996) provide evidence of a positive relationship between damages caps and defensive medicine with respect to elderly heart patients. Later on, Kessler and McClellan (2002a, 2002b) also find that by lowering the malpractice risk faced by physicians, tort reforms, including damages caps, favor the adoption of defensive practices and this effect is larger on diagnostic than therapeutic treatment decisions. A significant part of the literature focuses on the use of defensive medicine in obstetrics and, in particular, with respect to C-sections. For instance, Baicker et al. (2006) show that the geographical variations in the utilization rate of cesarean deliveries is not justified by variations in risks factors. Similarly, Esposto (2012) outlines that the state differences in the utilization of c-sections partially result from state-level liability reforms (including damages caps), whereas Yang et al. (2009) find that reduced litigation pressure caused by damages caps determines a reduction in the use of C-section, as well as in delivery expenditures.

[6]Mello and Kachalia (2010) and Mello et al. (2011) suggest a small negative impact of noneconomic damages schedules on defensive medicine, but they substantially base this conclusion on the evidence provided by the literature on the effects of noneconomic damages caps (i.e. flat or tiered caps).

how the adoption of noneconomic damages schedules impacts on the medical decisions of doctors in the Italian experience while including in the analysis also the performance of courts measured as civil backlog. The purpose is to examine whether schedules and courts' performance impact on the composition and intensity of the treatments offered by public healthcare facilities and their wards.[7]

Traditionally, the relation between tort reforms and defensive medicine has been studied at the level of individual physicians and mainly with reference to the U.S. context, that is, to a privately funded healthcare context.[8] Nevertheless, the organizational characteristics and the functioning of a public system are inherently different from those of a private one to the extent that malpractice pressure may influence professional choices differently and work through different channels and with a different intensity in public facilities. For example, in Italy, compared to the U.S., the public insurer (i.e. the State and regions) can exert less pressure and control over the treatments and tests reimbursed. At the same time, public hospitals enjoy less discretion in the organization of their activities. These facilities must comply with the objectives and guidelines set by health authorities, whose primary goal is to ensure the coverage of the medical services required by the population also with respect to the most risky activities. So that, for instance, we do not expect hospitals to retain from performing high-risk procedures or having high-risk specialties in order to avoid malpractice litigation. As seen in Chapter 2, healthcare organizations are also the entities responsible for providing their medical personnel with malpractice insurance. For their part, clinicians are hospitals' employees in all respects. Therefore, they are subject to the higher levels of management, in which facilities are organized, and end up facing simultaneously the incentives provided by both medical liability and the structures they work for.

The result is that the response of public employed physicians to medical liability may differ from that of private practitioners, because they may have a different perception of malpractice pressure. At the same time, even if physicians are concerned by the risk of litigation, they may have less room or lower incentives to adopt defensive practices in a public context. Hence, it is not obvious whether malpractice pressure affects the provision of medical services at the level of public hospitals. Furthermore, given its characteristics, such a setting requires the adoption of a different approach from the one traditionally applied. Individual doctors are no longer the best suited dimension of analysis, but rather an examination of possible variations in medical decisions at the level of the healthcare facilities themselves proves to be more effective and appropriate.

Using Italian public hospitals data for the period 2000-2010, we take advantage of the scattered timing of the implementation of noneconomic damages schedules to study the existence and features of a hospital- and ward-wide response to variations in malpractice pressure due to the adoption of schedules. At the same time, we also exploit the organizational structure of both the healthcare and judicial systems of the country to examine the implications of

[7]The analysis of the impact of schedules on the activity levels of Italian private hospitals goes beyond the scope of the present work.

[8]In Italy, the study of defensive medicine has been primarily done through the use of surveys of healthcare professionals, while the empirical investigation of doctors' behavior has had a marginal role. See, Section 5.2.1.

courts' performance. Specifically, we take advantage of the fact that Italian public hospitals may fall under a same regulating scheme implemented at the regional level, but they may be located in different court districts. Hospitals operating in the a same regional healthcare system may actually face different courts, which differ in terms of performance (i.e civil backlog). This allows us to disentangle the actual effects of judicial performance on the activities of hospitals and wards from the influence exerted by the healthcare policies set by regional governments, as well as to examine how the introduction of schedules affects doctors' behavior conditional on judicial efficiency.

Accordingly, we apply a Difference-in-Differences (DID) regression model that includes region, year, court and specialty fixed effects, and controls for the adoption of schedules, courts' performance and the operational characteristics of hospitals/wards. Our findings provide evidence that schedules do affect the behavior of clinicians, who tend to resort less frequently to defensive practices once the reference policy is implemented. This also means that publicly employed clinicians do vary their decisions on the composition and intensity of treatments in response to changes in malpractice pressure. Still, such a reaction is observed with respect to some but not all the outcome variables considered. The estimated effect is modest in magnitude, though it proves to be consistent among hospitals and their wards. In particular, when the liability constraints are lowered by the implementation of schedules of noneconomic damages, doctors tend to extend the preoperative hospitalization period of patients, but to reduce patients' overall length of stay. Our evidence supports the conjecture that malpractice pressure affects the provision of healthcare services by public hospitals, but the impact is limited in size and concerns only some dimensions (e.g. patients' preoperative length of stay) and not others (e.g. the case mix index). These results are also consistent with the idea that institutional features such as the public nature of the providers, the hierarchical structure of the healthcare organizations, and the employment condition of physicians restrict the impact of policy interventions to specific dimensions of care provision.

The chapter proceeds as follows: Section 5.2 provides the basic background for the present analysis with respect to previous literature and the Italian experience, while Section 5.3 illustrates the theoretical framework to understand the possible response of physicians to changes in malpractice pressure. Section 5.4 describes the empirical methodology, whereas Section 5.5 introduces the data. Finally, Section 5.6 presents and discusses the results obtained and Section 5.7 concludes.

5.2 Background

The study of the implications of tort reforms, including noneconomic damages caps, on the behavior of physicians and subsequently on healthcare utilization, has attracted much of attention from scholars in the last two decades. In Section 3.6.5, we have already presented two strands of the literature that are particularly relevant for the present work: (i) the analyses by Kessler and McClellan and the following studies on myocardial infarctions for Medicare patients, and (ii) the studies concerning the obstetrical practice. These studies show that the findings on the influence of the legal environment on the behavior of clinicians

so far are, to some extent, still mixed and inconclusive. Nonetheless, the overall evidence weighs in favor of the conclusion that tort reforms relaxing malpractice pressure do affect the decisions of physicians at least with respect to some types of health treatments.

Besides the two above-mentioned strands of the literature, a number of studies have also investigated the effects of malpractice liability on hospital activities. For instance, Cotet (2012) examines the implication of the adoption of noneconomic damages caps on general measures of healthcare delivery: surgeries, hospital admissions and outpatient visits. The author analyzes county-level data on healthcare delivery from the U.S. Department of Health and Human Services for the 1990-2006 period and state-by-state information on tort legislations from Avraham's (2010) Database of State Tort Law Reforms.[9] The author concludes that limitations on noneconomic awards negatively affect all the healthcare delivery measures analyzed: surgeries declines by 3.5%, admissions by 2.5% and outpatients visits other than emergency by 4.5%. Moreover, since "*noneconomic damages caps reduce the cost of malpractice, they change physicians' incentives and preferred courses of treatment*",[10] according to Cotet these lower utilization rates are consistent with a decrease in defensive medicine.

In particular, for the present analysis, relevant studies are those investigating the relationship between medical liability exposure and hospital activities in the British NHS. In fact, even though these studies do not test the effects of damages caps or any other tort reform, they offer significant insights on how the exposure to the risk of litigation may shape hospital activity in a healthcare system which shares relevant features with the Italian one. In particular, Fenn et al. (2007) explore the relationship between malpractice liability and the utilization of imagining and scanning diagnostic procedures. As proxy of the litigation risk, the authors use the level of deductibles on the malpractice insurance premiums of hospitals. Using data on the UK healthcare facilities for the year 2001, they find that hospitals dealing with higher expected cost from litigation (i.e. higher deductibles) report a more frequent use of costly imagining procedures. By contrast, routine tests (e.g. X-rays) are not affected by fear of litigation, but rather by the underlying activity levels of the healthcare facilities themselves.

Fenn et al. (2010) extend the previous study by covering a 5-year period (2000-2004) and by including an additional measure of liability risk such as the premium discounts that hospitals receive by the NHSLA for achieving pre-determined risk management standards. By doing so, the authors test whether the choice of both higher deductibles and higher risk management standards is associated with a higher frequency of diagnostic tests. Differently to their previous work, Fenn et al. (2010) conclude that the diagnostic activity of hospitals was not affected by the financial incentives related to their liability exposure. The authors offer a number of possible explanations. They suggest that the existing incentives provided by the NHSLA are too weak to stimulate a hospital-wide response because of the complexity

[9]The specifications applied by Cotet (2012) foresee county and year fixed effects and control for state-specific trends. The author also introduces a measure of the distance between county population centroid and the bordering state implementing caps. This additional variable is meant to take into account the fact that, as consequence of the implementation of caps, (i) doctors may move to another state; and (ii) patients may devote more time to look for a doctor and consider physicians operating in neighboring states.

[10]Cotet (2012), p. 227.

of hospitals' structure. The different organizational levels of a hospital (i.e. administration and medical staff) not only have different goals and constraints, but they also do not usually communicate properly. As a result, "*hospitals are not good at passing the tort incentives to their employees and, as such, the variations in liability may have a weaker effect on care than expected.*"[11] A last possible justification lies in the fact that the utilization of diagnostic tests might not be a good measure of care in the English context,[12] as it may actually be more responsive to 'clinicians-targeted' initiatives than to 'hospital-targeted' mechanisms.[13] In this regard, Fenn et al. (2010) suggest that a better measure of care levels may be infection controls. The effects of financial incentives connected to a better risk management on patient safety is examined in Fenn et al. (2013). Based on hospitals data on the MRSA[14] infections in England and Wales for the period 2001-2008, the authors apply a dynamic panel specification concluding that higher risk management standards are actually associated with lower infection rates.

Although they do not directly investigate the impact of tort reforms, these papers and their findings show the complexity that characterizes the relationship between hospital activity levels and malpractice risk. If we can expect hospital levels of performed treatments or procedures to be affected by the risk of litigation, the possible effects and their magnitude are harder to predict. Moreover, these difficulties increase in the case of a public healthcare system, where other forces besides malpractice risk (e.g. budget constraints or policy goals) come into play in driving doctors' decisions.

To sum up, the existing literature studying the impact of noneconomic damages caps on medical practice has mainly devoted its attention to the reaction of physicians, therefore the dimension of this type of analyses is traditionally the conduct of individual clinicians. In contrast, the existing empirical studies investigating the effects of malpractice risk at the level of public healthcare facilities, essentially fail to test the effects of damages caps or other tort reforms. Hence, how public hospitals respond to the implementation of ceilings on non-pecuniary damages and to the subsequent loosening of malpractice pressure is still open to question. In addition to this, the examination of the implications of limiting noneconomic damages on the behavior of doctors has basically considered only the case of caps (i.e. flat caps or basic forms of tiered caps) and has provided mixed findings so far, while the investigation of the actual effects of schedules has been substantially disregarded. Moreover, caps have always been examined regardless of the judicial system in charge of their application, thus the potential influence exerted by the judiciary on the decisions of physicians has never been included in the analysis leading to potentially partial and biased results. The present

[11] Fenn et al. (2010), p. 239.

[12] In particular, Fenn et al. (2010) point out that, in the U.S., diagnostic tests "*have sometimes been interpreted as good measures of excess or supplier-induced care. However, overall rates of diagnostic activity are very much lower in the United Kingdom, rendering that interpretation less likely.*" In addition, other institutional differences such as the private nature of the U.S. system and/or the resource-constrained nature of the English NHS may play a role.

[13] Specifically, Fenn et al. (2010) highlight that "*certain types of patient care activity, including the use of diagnostic tests, may be less responsive to incentives placed at the level of the hospital by comparison with incentives placed at the level of the clinician*".

[14] The acronym MRSA indicates methicillin resistant Staphylococcus aureus infections.

chapter seeks to make up for these shortcomings by examining the implications of schedules adoption on hospital activities in relation to the Italian healthcare and judicial systems.

5.2.1 Past Research on Defensive Medicine in Italy

As extensively illustrated in Section 2.4.2, in the Italian context the phenomenon of defensive medicine has been traditionally studied through surveys administered to doctors. Overall, these inquiries suggest that the use of defensive practices is a common behavior among clinicians and, in particular, among the younger ones. The main determinant of such conduct can be identified as the fear of being involved in a legal dispute and of facing a compensation request. However, surveys of healthcare professionals entail drawbacks that make them not a very effective instrument to assess the extent and magnitude of defensive medicine for a number of reasons.[15]

First, participants in these surveys may be reluctant in truthfully reporting practices that might give rise to malpractice claims. Second, to a certain extent, doctors may actually adopt defensive practices unconsciously, thus they can underestimate the relevance of defensive medicine in their professional activity. Third, physicians may manipulate their responses to pursue political purposes. In other words, clinicians may actually claim a more frequent use of defensive practices than in reality in order to stress that they are subject to excessive malpractice pressure. By doing so, they may seek to convey to the great public the message that clinicians should receive more protection and that a policy intervention is needed to reduce their malpractice exposure.[16] Fourth, there might be a selection through participation, whereby the respondents to these surveys are also those physicians more sensitive to the risk of litigation and, thus, more prone to defensive medicine. A further concern is related to the general form of the questions usually included in these surveys. General questions may not well capture the actual behavior of doctors or depict all the possible scenarios faced by physicians and they may also leave room for biased responses. Finally, a further problem is specifically related to the characteristics of the Italian system, where doctors, besides working as hospital employees, are also generally engaged in private practice outside the public healthcare facilities. Consequently, physicians may actually adopt different behaviors depending on the public or private environment in which they operate. However, these surveys simply ask question regarding doctors' professional activity in general without taking into account the existence of two potential distinct behaviors.

Still, the results obtained to date are substantially in line with the findings reported for the U.S. context.[17] Nonetheless, these results based on self-statements rather than on observed behaviors may actually differ from actual clinical decisions as physicians may adopt a different behavior from the one reported by these surveys especially when they work in a public hospital. Therefore, to provide a more accurate picture of this phenomenon in Italy,

[15] See, Klingman et al. (1996).

[16] In particular, Klingman et al. (1996) suggest that "*physicians may be tempted to manipulate their responses to buttress their professional societies' pro-malpractice reform positions and thus may exaggerate their true level of concern about malpractice*".

[17] See, for instance, Studdert el al. (2005), or Massachusetts Medical Society (2008).

it is essential to move from analyses exclusively based on statements provided by clinicians to analyses based on the observation of the actual conduct of doctors.

5.3 Theoretical Framework

A theoretical framework that offers an explanation for the contrasting findings of the literature has been provided by Currie and MacLeod (2008). The authors model the impact of tort reforms on behavior of individual physicians by modifying the standard tort model to express doctors' decisions as directly dependent on patient condition and on the probability of committing an error with possible legal consequences.[18]

A preliminary issue is related to improve the understanding of why doctors are potentially concerned about the possibility of being sued given that malpractice claims usually seem not to imply an actual financial risk for them. On the one hand, malpractice claims are unlikely to lead to payouts that exceed the limits of the professional liability policy underwritten by clinicians.[19] On the other hand, insurance premiums are, in general, not experience-rated. Therefore, the involvement in malpractice claims is not expected to increase the malpractice premiums to pay at the individual level. In addition, even if insurers would use experience rating, physicians have the possibility, to some extent, to pass the higher insurance rates onto patients by raising medical fees.[20] Nevertheless, despite the low financial exposure, healthcare professionals are deemed to take seriously into account the problem of medical liability because of all the non-insurable costs that malpractice litigation implies. Specifically, malpractice litigation may entail significant psychic and time costs, but even more important, it may have serious negative consequences on the reputation of clinicians.[21] In any case, although physicians take professional liability into consideration and may respond to an increased liability pressure by applying a higher precaution level, a medical accident with potential legal consequences is always possible. In fact, as suggested by Arlen and MacLeod (2005), even though doctors may increase their degree of care and invest in their expertise, they cannot eliminate the possibility of incurring a mistake that leads to liability, but rather they can only lower it. This probability – or error rate[22] – plays a key role in the model

[18] In a more recent work, Currie and MacLeod (2013) further extend their study of doctors' behavior by investigating how differences in both diagnostic and surgical skills of physicians influence procedure utilization and health outcomes. In particular, with respect to the specific case of C-sections, they find that "*better diagnostic skill improves the matching between patients and procedures and leads to better health outcomes.*" The result is that cesarean delivery is less likely to be chosen for low-risk women, while its utilization increases for both medium- and high-risk women with a larger effect for the latter.

[19] See, for instance, Hyman et al. (2007). In this regard, for example, Fisk (1998) notes with respect to the U.S. experience that "*Large jump verdicts are frequently no more than an illusion. With relatively rare exceptions, verdicts are cut back, thrown out, set for dramatically less than the original amount. Or they are awarded against people or entities with little or no money to pay them.*"

[20] See, for example, Danzon (1991) and Sloan (1982).

[21] On the importance of reputation for physicians, see Sage (2004). As for the time costs, for example, Seabury et al. (2013) show that doctors on average spend over 4 years of a 40-year career with an open malpractice claim.

[22] Hereafter, when we use the term 'error rate', we refer to the probability for doctors of committing an

under discussion.

The starting point of the model is that clinicians cannot entirely rule out the risk of committing an error and, thus, of being found liable. These risks are both present when physicians perform a treatment and when they decide not to perform it. That is to say, doctors may injure a patient by mistakenly applying a medical procedure, but they may also harm a patient by not performing a procedure that would have been beneficial.[23] Both situations may in principle lead to a malpractice dispute and, thus, imply a specific error rate. It is important to include both these aspects in the analysis of the effects of a liability variation on physicians' decisions and this is precisely one of the main strengths of the model proposed by Currie and MacLeod (2008). In fact, this framework explicitly considers the fact that physicians have to decide whether or not to perform a treatment and, to this purpose, they compare the error rate (i.e. the probability of making an error and being found liable) entailed by both the performance and the non-performance of a given treatment.

In particular, the model regards the case of a negligence-based system, whereby physicians are found liable only when their conduct – the decision either to provide or not to provide a given treatment – has been negligent, that is, when their level of precaution was lower than the legal standard of care. In such a context, physicians take into account the malpractice pressure they face by weighing the net benefit and cost of their choices. The former includes "*the intrinsic reward from treating the patient, any pecuniary rewards from treatment, and the opportunity cost of care*",[24] while the latter consists in the expected liability that physicians will incur in by committing an error. An important feature to be born in mind is that the model abstracts the resource constraint with which physicians' treatment choices have to deal with in reality and that limits treatment provision in many circumstances. Within the theoretical framework considered, the decision to provide or not to provide a treatment is driven, on the costs side, exclusively by liability considerations and not by resource use. In the case of public hospitals, for example, clinicians may decide not to perform a procedure and/or treatment because the related expenditure would be too high and would not be justified by the possible benefits. The inclusion of budget constraints in the model would increase the frequency of the non-performance of a procedure and/or treatment. Nevertheless, the fact that resource use has been disregarded should not affect the present empirical analysis, whereby this aspect is accounted for by control groups. [25]

error that gives rise to liability.

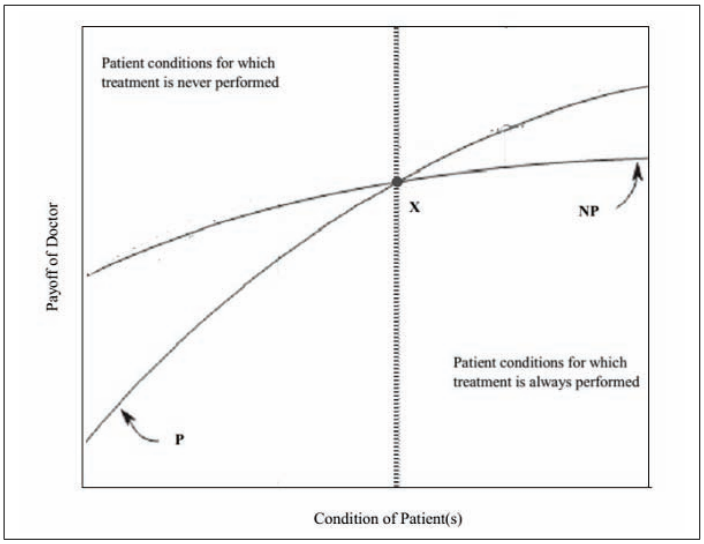
[23]This approach is perfectly consistent with the medical liability regime existing in Italy. As discussed in Chapter 2, clinicians may be found liable for negligence or imprudence. The former corresponds to the case where the patient is damaged by an omission of care (i.e. non-performance of a treatment). The latter coincides with the hypothesis of a victim damaged by the performance of a treatment without all the precautions that are considered as necessary.

[24]Currie and MacLeod (2008), p. 11.

[25]In fact, the reference context is uniform as we are dealing with data on a same country and hospitals present substantially uniform technologies and clinical practice. Therefore, the potential effect exerted by budget considerations should be canceled out on average. Clearly, the model of Currie and MacLeod is a stylized description of the procedure choice of physicians and a possible version of it should also include these budget constraints. However, the result would be more complex than the proposed setting, which allows anyway to include in the analysis the fact that doctors may err either by performing a treatment or by not

Both benefits and costs are shown to be influenced by the existing liability system, by patient conditions and by the likelihood that a medical error leads to a malpractice claim. Since physicians cannot modify the first two factors, they choose the severity threshold from which to start treating patients in the attempt to minimize their error rate (i.e. maximizing their expected payoff). In this respect, a crucial role in the Currie and MacLeod's framework is played by the so-called marginal patient. This corresponds to the patient, for whom, given her health status, the clinician is indifferent between providing and not providing the treatment. In particular, the authors assume an exogenous distribution of both costs and benefits, thus an exogenous distribution of the payoff that doctors obtain by providing and by not providing a certain treatment. The result is that, for a given malpractice rule, these distributions are driven solely by patient condition. (Figure 5.1).

Figure 5.1: Physician's Decision Process Between Performing and Not Performing a Treatment



Notes: Notes: NP=Distribution curve of doctor's payoff when the treatment is not performed; P=Distribution curve of doctor's payoff when the treatment is performed.

More specifically, as drawn in Figure 5.1, P and NP represent the distribution curves of physicians' payoff for any given patient condition when doctors decide to perform and not to provide a given treatment respectively. In this specific case patient condition worsens going from left to right and the distribution curves have an increasing slope at a decreasing rate, indicating that the payoffs for doctors from treating a patient increase, the more severe the patient condition becomes. This implies that not performing a given treatment in the case

performing it.

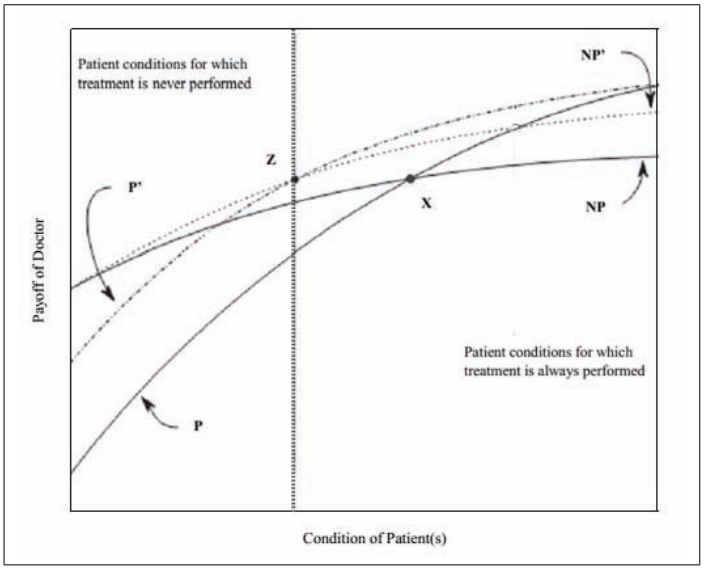
of a patient with a very serious health status entails a greater risk of committing an error, potentially leading to medical liability. Then, clinicians choose to apply the treatment when the curve P is above NP since it means that the payoff resulting from the performance of the treatment is higher than the one resulting from the non-performance of the same treatment. In turn, when P is below NP, physicians prefer not to prescribe the treatment. The marginal patient is depicted by point X, where clinicians' payoff stemming from no-treatment equals that derived by the performance of the treatment. As a consequence, the marginal patient identifies the amount of treatments physicians perform and, in our example, all patients with a more severe health condition than the marginal one are treated, while those with a less serious condition are not.

A first implication of this setting is that any change in liability rules potentially modifies the payoff of doctors and shifts the distribution curves P and NP (the direction of this shift depends on the actual effect of the legal change in terms of malpractice pressure). In response to this shift, physicians will change the number of treatments performed in order to minimize their risk and maximize their payoff under the new legal rules. So that, they will identify the new health condition defining the marginal patient. As a result, a tort reform ultimately modifies the amount of patients treated as it affects the probability of being sued in the event of an error for both performing and not performing a treatment. Graphically, this means that the new point of intersection between the two distribution curves P and NP – when the performance and the non-performance of the treatment entail the same payoff – will represent the new marginal patient, thus the new amount of treatments provided.

A fundamental feature of the model is that it does not focus on how doctors perform a given treatment, but rather whether they perform it or not. Considering that a variation in liability produces a change in doctors' decisions between providing and not providing the treatment with respect to the marginal patient, Currie and MacLeod offer guidance to evaluate the response of clinicians to tort reforms in term of levels and composition of hospital activity. Traditionally, the concept of liability itself provides that a variation in malpractice pressure produces a change in the level of care undertaken by physicians in performing the treatment. On the contrary, the theoretical framework developed by Currie and MacLeod focuses on a quantitative dimension (i.e. the number of patients treated), because it recognizes that clinicians deal with two sources of risk: physicians face the risk of being found liable for committing an error when they decide to apply a treatment, as well as when they decide to avoid it. Hence, before even deciding the degree of care to undertake, clinicians have to decide whether or not to perform the treatment, taking into account that both options may lead to litigation in the event of an error.

A second relevant implication is that, when doctors' payoff from treating a patient grows with the increasing severity of a patient's condition, the effect of a tort reform loosening the liability constraints faced by physicians is to shift downwards the condition of the marginal patient. This means that the marginal patient is now identified by a less serious health status as a consequence of the decrease in malpractice pressure. Going back to Figure 5.2, we see that such a legal change determines a shift upward of both curves with the marginal patient moving to the left (i.e. from X to Z). Hence, if the probability of incurring an error with legal consequences is higher when the treatment is chosen than when the treatment is not

Figure 5.2: Physician's Decision Process When Medical Liability Is Reduced



Notes: Notes: NP=Distribution curve of doctor's payoff when the treatment is not performed; P=Distribution curve of doctor's payoff when the treatment is performed.

chosen - as depicted in Figure 5.2 - the actual effect of a weakening of malpractice liability is an increase in the utilization of the treatment itself. This can also be interpreted as a reduction in the negative defensive practices undertaken by physicians. By contrast, if the non-performance of the treatment implies a higher risk of being sued in the event of an error than the performance of the same treatment, such a variation in malpractice pressure leads to a decrease in the number of patients treated. Similarly to the previous scenario, this means that positive defensive conduct of doctors becomes less frequent.

More in general, the model suggests that the direction of the impact produced by a weakening of malpractice liability on the use of a therapeutic or diagnostic procedure is an empirical issue that depends on the risk-risk trade-off between executing the procedure and avoiding it with respect to the marginal patient. In this way, this theoretical framework illustrates why the final effect of a tort reform on the utilization rate of a procedure cannot be uniquely determined *ex ante* on theoretical grounds.[26] As the authors themselves

[26]In particular, usually there is no reference point on the clinical appropriateness of medical treatments. This makes it difficult to formulate a hypothesis *ex ante* with respect to the final impact of a variation of malpractice pressure on the utilization rate of a treatment. The formulation of a hypothesis becomes possible only when the empirical literature provides a reference. This is, for example, the case of the performance of C-sections in Italy which is characterized by an excess in cesarean utilization. Given these circumstances, as observed by Frakes (2012), "*it may be reasonable to assume that the marginal mother is inappropriate, in an absolute sense, for cesarean delivery. Accordingly, it may be reasonable to assume that a physician*

state: "*whether the change in the law results in increases or decreases in procedure use depends on what the relative error rates are when procedures are performed or not performed.*"[27] Consequently, the model provides a framework to interpret the observed changes in medical decisions as a response to the relative risk between performing and not performing a procedure. More precisely, by examining how physicians react to a variation in medical liability, it is also possible to infer whether healthcare professionals undertake a higher malpractice risk by providing or not providing a treatment.

5.4 Empirical Framework

5.4.1 Outcome Variables of Interest

We exploit here the model just illustrated to evaluate and interpret the evidence of the estimated impact of limiting noneconomic damages on the provision of healthcare at the level of both hospitals and their wards. However, applying this theoretical framework to a public healthcare system such as the Italian one, requires the modification of the perspective of analysis.

Indeed, Currie and MacLeod (2008) offer a model that focuses on the choices of the individual practitioners and that, therefore, fits better the case of the U.S. healthcare system: a privately funded system, where doctors act mainly as contracted professionals and ultimately bear the cost of malpractice litigation and malpractice insurance.[28] Differently, in the Italian system, physicians employed by hospitals are not directly exposed to the financial implications derived from the clinical decisions that may lead to malpractice litigation and, thus, affect the cost of malpractice. On the contrary, these implications relate primarily to the healthcare facilities themselves.

In Italy, in fact, most of the physicians work in public hospitals or in healthcare facilities affiliated to the public system. These structures are hierarchically organized with different levels of management and primarily committed to the pursuit of the policy guidelines set by public health authorities. They are also the entities responsible for providing their medical staff with appropriate insurance against third party liability. In turn, being their employees in all respects, clinicians must comply with the internal regulations and objectives of these hospitals. Besides these general rules, doctors have also to deal with the incentives and guidelines provided by the management levels that may set specific priorities. As a result, the influence and control exerted by the management may move doctors aways from the pursuit of their sole professional interest, which in Currie and MacLeod (2008) corresponds to the reduction of physicians' litigation risk.

Moreover, contrary to what happens in a private system, doctors cannot even easily decide

treating this marginal mother is sensitive to the risk of improperly performing a cesarean delivery and that malpractice pressure thus pushes the cesarean rate downward (not upward) on the margin.".

[27] Currie and MacLeod (2008), p. 14.

[28] For more information on the U.S. healthcare system, see, for instance, Shi and Singh (2010) and Leflar (2013).

to move from a public hospital to another in order to reduce their malpractice exposure since public facilities hire physicians through public selections.[29] Such a context has two main implications. First, when it comes to investigate medical defensive practices – more in general, the impact of malpractice reforms on the provision of medical services in a public healthcare system – it is more appropriate to examine the possible reactions of hospitals rather than those of individual doctors. Hence, the most appropriate dimension for the analysis has to be set at the level of the healthcare facilities and their wards and not at the level of individual practitioners. Second, the existence of a hospital-wide response to changes in medical liability is not straightforward since, in this case, doctors work under different conditions compared to their privately employed colleagues. They are subject to different incentives and standards, so that they may perceive to a different extent the risk of litigation and not react to it in the same way. For instance, a doctor working in a public hospital may be less concerned by compensation requests since she does not directly bear the cost of malpractice coverage. Similarly, she may also be less worried about the reputational consequences of a lawsuit if she knows that the attention of the media will be focused on the involvement of the facility she works for, rather than on the identity of the medical staff accused.

In the event of a response at the level of healthcare structures, we expect that the possible reactions of hospitals will concern primarily the arrangements through which treatments are provided to patients. Given the features of the system, clinicians are expected to have a limited capacity to substantially impact with their decisions the macro level of hospital activity (e.g. volume of admissions or discharges), but they may rather affect the micro level. The activity volumes of Italian hospitals depend mainly on public capacity and the epidemiological needs of the population since the NHS offers universal healthcare coverage to all citizens and residents of the country. Consequently, we do not focus on volumes of hospital activity but on the combination of the different volumes. In particular, we investigate the possible effects on the intensity and composition of the treatments provided.

As a result, in the present analysis, we apply the theoretical framework offered by Currie and MacLeod (2008) to the Italian NHS system. In particular, moving away from the analysis of doctors' reactions and focusing on hospitals, we examine indicators of treatments' composition, rather than investigating individual practice areas or the utilization of specific medical procedures. In this regard, physicians working in public hospitals are expected to have greater discretionary power specially with respect to two main aspects of the provision of medical services: (i) the regime under which patients are treated (e.g. day hospital and standard inpatient stay), and (ii) the duration of the period spent by patients in the hospital.

In particular, to examine the possible changes in the composition of treatments, a promising line of investigation consists in analyzing how doctors vary the recourse to standard

[29] A number of papers have studied the effect of tort reforms on the supply of physicians. For example, Matsa (2007) shows that damages caps cause a significant increase in the supply of specialists in rural areas. Similarly, in a previous work Encinosa and Hellinger (2005) report that damages caps increase physicians supply in general and, in particular, in rural counties. Differently, Klick and Stratmann (2007) examine the effects of tort reform on doctors supply in high-risk specialties finding that only noneconomic damages caps significantly affect doctors supply and only in high-risk specialties.

inpatient stay in response to a change of medical liability. In practice, this information is obtained by examining the extent of the variation in the amount of patients treated under the so-called one-day regime, that is the amount of patients who are discharged within 24 hours of their admission and after having spent one night in the healthcare facility. Unlike total discharges (i.e. patients treated) and day-hospital patients, this measure is relatively more suitable to appreciate how clinicians use their discretionary power to modify the composition of treatments in response to liability variations. In public facilities, physicians cannot in theory refuse patients, but they can decide under which hospitalization regime to admit them (i.e. inpatient standard regime, day-hospital or one-day regime). However, since day-hospital services are defined quite strictly, the room for physicians to opt for this type of hospitalization is rather limited. On the contrary, doctors enjoy greater discretion with respect to the application of the one-day regime. Moreover, under this regime they comply with the public nature of their profession while avoiding the inpatient standard regime when the day-hospital one is not applicable.

Aside from deciding the composition of treatments (i.e. under which regime to admit patients), doctors have also to decide the intensity of treatments. In this sense, one of the most traditionally used indicators of patients' hospital experience is length of stay. The duration of patients' stay in a hospital is also often considered as one of the aspects of medical provision that is more affected by the defensive purposes of doctors.[30] However, patients' stay can be broken up into three main phases: the pre-treatment, the treatment, and the post-treatment phase. Therefore, besides the overall length of stay, the examination of the duration of these phases may provide further information on the risk trade-off entailed by each stage of inpatient stay. In this respect, the preoperative length of stay is particularly interesting. This coincides with the period spent in the hospital by a patient before a surgery and allows us to focus on a specific aspect of inpatient stay while also considering a more specific sample as this indicator regards only surgical activities. As a consequence, this measure also makes it possible to investigate the behavior of doctors in relation to a sample that is qualitatively different from the general one observed through the overall length of stay and potentially at higher risk of malpractice claims.

Finally, it is interesting to verify whether there is evidence of any patient discrimination (i.e. cream skimming) as a consequence of a change in malpractice pressure. To this end, we consider the case mix index and the entropy index, which tell us whether doctors tend to treat less complex patients or to focus on similar cases respectively.

To sum up the empirical purposes of our analysis, we investigate the impact of schedules of noneconomic damages on the following measures of treatment composition and intensity:

- *One-day admissions (1d_admissions)*: the ratio between the number of patients admitted under the one-day regime and the overall number of discharged patients;
- *Length of stay (los)*: the average number of days spent by a patient in the hospital;
- *Preoperative length of stay (po_los)*: the average number of days elapsed between the date of admission of a patient and the day of the surgery;

[30] See, for instance, Frakes (2012b), Avraham and Schanzenbach (2011) or Huesch and Richman (2012).

- *Case mix index (icm)*: the ratio between the composition of the cases treated weighted on the basis of the DRG system and the weighted composition of the cases treated at the national level,[31] and

- *Entropy index (entropy)*: measure of the heterogeneity of the distribution of patients in the various DRG.[32]

In this way, our aim is to offer valuable insights into the possible effects exerted by a modification of malpractice pressure on the treatment decisions undertaken by publicly employed physicians. In our study the modification of malpractice pressure can be due to the introduction of schedules and/or a worsening of judicial performance.

5.4.2 Estimation Strategy

In order to evaluate the effect of the implementation of noneconomic damages schedules by Italian courts on hospitals' activity levels, our empirical strategy exploits the scattered timing of the reform to apply a Difference-in-Differences (DID) estimator already discussed in Chapter 4. The goal is to examine the existence and characteristics of a hospital-wide response to variations in malpractice pressure. In particular, we focus our attention on the changes in medical liability induced by the introduction of noneconomic damages schedules while taking into consideration also the judicial environment in which this policy intervention finds application.

Consequently, as in the previous chapter, the *treatment* consists in the introduction of noneconomic damages schedules by Italian courts. However, in this case, the dimension of analysis is no longer represented by public local healthcare providers (i.e. LHUs, IHs, THs and RHs), but by public hospitals. Specifically, healthcare providers can manage more than one hospital and the hospitals run by a same healthcare provider can be placed in different courts. In the present analysis, we focus directly on the managed hospitals that are now regarded as individual units of observations. Therefore, to evaluate the effects of this *treatment*, we compare changes in the outcome variables of interest for the hospitals under the competence of courts that have adopted schedules during the period of observation (*treated*) with the changes referring to those hospitals placed in the districts of courts that did not make such a switch (*untreated/control group*). This control group includes the hospitals ruled by courts that introduced the *treatment* before 2000, as well as those facilities placed in courts that did not implement schedules neither during nor before the observation period.

[31] The case mix index expresses the complexity of the cases treated by a hospital or ward compared to the average complexity of a set of reference hospitals or wards (i.e. the Italian hospitals and wards). A case mix index higher than one indicates that the related hospital or ward treats more complicated cases compared to the national average, whereas a value lower than one corresponds to a lower degree of complexity than the average one.

[32] The heterogeneity is minimum when all discharged patients present the same DRG and maximum when the discharged patients are divided into the different DRG in equal parts. For further details on variables' definition and their sources see Table 5.6 in the Appendix.

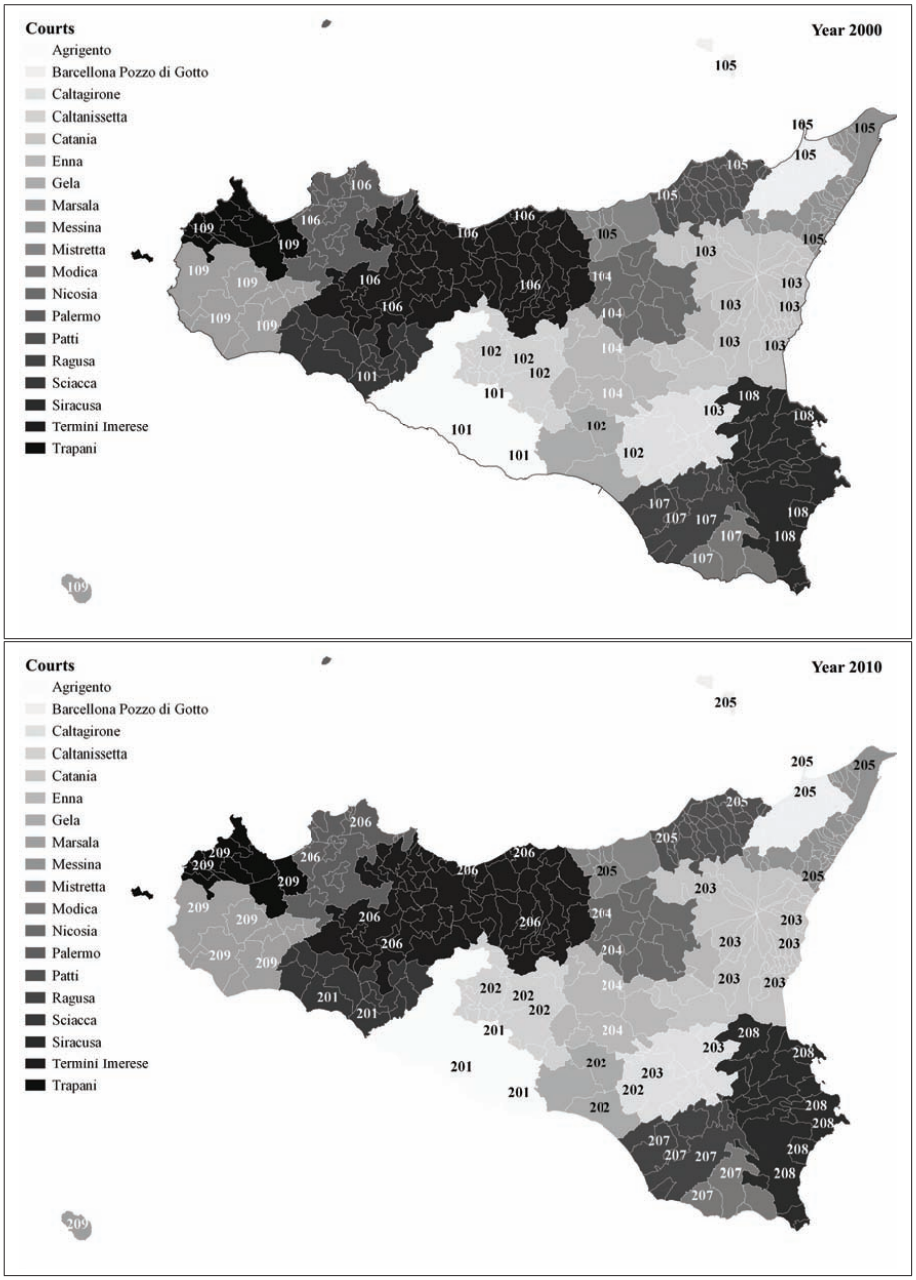
The present empirical approach shows a number of similarities with the one adopted in Chapter 4 to examine the impact of the reference policy on insurers' behavior.[33] Given the scattered timing of the implementation of the *treatment*, what matters is the year of the schedules introduction and the main problem for the soundness of the analysis concerns precisely the choice made by courts of such a year. This decision has not to be influenced by omitted variables related to medical malpractice and this condition is likely to be met in the case of Italy. In fact, first schedules are not specifically directed to deal with malpractice cases to the extent that, originally, they were not implemented to respond to problems related to either malpractice litigation or the general phenomenon of medical malpractice. Second, the chosen period of observation leaves out from the analysis those courts that were among the first to implement schedules (before 2000), as well as those that were among the last (after 2010). Therefore, one can expect that courts' heterogeneity in terms of structural, operational and even ideological features, which could condition the introduction of schedules, is limited and should not constitute a bias for the analysis itself. In addition, we also include in the regressions court fixed effects further controlling for unobserved time-invariant heterogeneity among courthouses. As a result, our identification relies on the assumption that the treatment year (i.e. the year of schedules adoption) is exogenous with respect to the outcome variables, which appears reasonable in this context. A possible further concern can arise with respect to the distribution of public hospitals across court districts' borders. In particular, the soundness of the present analysis would be questioned if public hospitals could strategically choose their location preferring those courts where there is a lower risk of malpractice litigation. However, as seen, this is not the case and the distribution of Italian public hospitals can be considered a random one with respect to courts, because the opening and location of public hospitals are decided at the level of regional governments and are mainly driven by legal requirements and political long run horizon decisions.[34]

Finally, as in the previous chapter, we also take advantage of the organizational structure of both the judicial and healthcare systems in Italy. Nonetheless, since the observational unit is now the single public hospitals, what we exploit here is the fact that healthcare facilities falling under a same regional government may actually be placed in different court districts as depicted by Figure 5.3 in the case of the Sicilian public hospitals for the years 2000 and 2010. This is particularly relevant since the determinant for the identification of the courthouse, where a claim for medical malpractice has to be filed, is the location of the hospital where the alleged case of medical malpractice took place. These two elements combined together imply that hospitals subject to a same regional healthcare policy may be ruled by different courthouses. Therefore, they may deal with courts that differ in level of performance (i.e. civil backlog) and in the adoption of schedules. Moreover, an additional consequence is that a single court may be responsible for more than one public hospital, so that the caseload of the court is not exclusively determined by one healthcare structure. This is, for example, the case of the Courts of Catania and Termini Imerese that in 2000 had under their competence 6 and 5 public hospitals respectively (Figure 5.3).

[33] For a more detailed individual discussion of all these common aspects, see Section 4.3.1.

[34] In particular, the decision of the municipality has to comply with specific population requisites.

Figure 5.3: Court Districts and Hospitals Location in Sicily (2000-2010)



Notes: Distribution of public hospitals across court districts in 2000 and 2010 in Sicily. The colored areas identify the different court districts, while numbers indicate the location of the different hospitals managed by a same LHU.

This unique configuration enables us to disentangle the effects of both the *treatment* (i.e. schedules adoption) and judicial performance from possible omitted variable problems. As discussed in Chapter 2, regions are the level of authority in charge of the planning and organization of healthcare provision within their territorial borders. Hence, falling under the same regional government means being part of the same regulatory framework. Hospitals have to pursue aligned policy goals and organize their activities according to common policy guidelines.

As a result, we study the behavior of hospitals that operate under the same system of rules and policies as set by regional healthcare authorities, and we can investigate how these facilities respond to variations in malpractice pressure. Variations due to the implementation of noneconomic damages schedules, as well as changes in the levels of judicial performance, which differ according to the different area where the facility is located within the region.

In addition, we use fixed effects estimators, controlling for court fixed effects, specialty fixed effects as well as year and region fixed effects. Year fixed effects allow adjustment for common shocks that impact on the provision of care. Region and specialty fixed effects control for region- and specialty-specific time-invariant unobservable characteristics that may affect medical care utilization rates and composition. Whilst, the unobservable features of courts potentially influencing the adoption of schedules are controlled by court fixed effects. A further important implication is that, in this case, each hospital is directly and uniquely associated with a single court and it is no longer necessary to include a weight to express the relative importance of a court for the related healthcare provider.[35] Hence, our treatment (i.e. *Schedule*) is now defined as a binary variable: treated hospitals are those for which the dichotomous variable *Schedule* moves from 0 to 1.

Defining Y as the outcome of interest for hospital h at time t, we first estimate the following Difference-in-Differences specification:

$$\begin{aligned} Y_{ht} =& \alpha_h + \gamma_a + \rho_t + \vartheta_j + X_{ht}^{'}\beta + \theta Backlog_{jht} \\ &+ DSchedule_{jht} + \omega Backlog_{jht} * Schedule_{jht} + \varepsilon_{ht} \end{aligned} \tag{5.1}$$

where ε_{ht} is the error term, while α_h are hospital fixed effects, γ_a are the regional fixed effects, ρ_t controls for yearly shocks and ϑ_j are court fixed effects. *Backlog* is a continuous variable expressing the level of civil backlog of $Court_j$, while *Schedule* is a dummy variable equal to one when $Court_j$ applies noneconomic damages schedules and $t \geq t*_j$, where $t*_j$ is the year of adoption of the treatment by $Court_j$. D is the DID coefficient, whereas $Backlog_{jht} * Schedule_{jht}$ represents the interaction between *Backlog* and *Schedule*. Finally, with X_{ht} we control for a group of variables at the hospital level, which reflect the main operational characteristics of the hospitals themselves. In particular, we included: the number of inpatient beds, the total number of staff employed, the total number of doctors employed,[36]

[35] For a detailed explanation of the weights used to include the partial overlapping between courts and healthcare districts in the empirical analysis performed in the previous chapter, we refer to Section 5.3.1.

[36] The number of doctors employed by public hospitals is exogenous with respect to our *treatment* (i.e. the introduction of schedules). In fact, in a public system such as the Italian one, physicians cannot simply

the number of wards, the case mix index, and the entropy index.[37]

We also investigate the impact of adopting noneconomic damages schedules and of judicial performance on the activity level of hospitals' wards. To this end, Equation (5.1) is modified as follows:

$$\begin{aligned} Y_{wht} =& \alpha_w + \gamma_a + \rho_t + \vartheta_j + X_{wt}^{'}\beta + \theta Backlog_{jwt} \\ &+ DSchedule_{jwt} + \omega Backlog_{jwt} * Schedule_{jwt} + \varepsilon_{ht} \end{aligned} \tag{5.2}$$

where, differently from the previous specification, Y is the outcome of interest for ward w at time t and α_w are ward fixed effects. Moreover, in this case, we include a set of controls X_{wt} related to the operational characteristics of wards. Specifically, we consider: the number of wards' inpatient beds, the total number of beds devoted to day-surgery, the number of beds for day-hospital care, and the number of beds actually used.

5.5 The Dataset and Descriptive Statistics

For the purpose of the present work, we combine the data on the judiciary provided by the Italian Ministry of Justice, which has already been presented and employed in the previous chapter, with a second dataset containing information on the activity levels and operational characteristics of hospitals for the period 2000-2010.

The data on the judicial system, in particular, concern: (i) the caseload of each single court (i.e. new, pending and closed cases per year), and (ii) the year of adoption and the structure of the noneconomic damages schedules eventually applied by each courthouse.[38] Thanks to this information, we computed for each court the related civil backlog, which again has been used as proxy of judicial performance: a higher civil backlog suggests that the court is characterized by a longer processing time of civil cases.[39] Even though Italian courthouses vary widely in terms of performance (expressed by the backlog index), our data indicates that the courts of our dataset were able on average to close less than a third of the annual pending proceedings. In fact, between 2000 and 2010, for every closed case there were 3.67 undisposed proceedings (Table 5.1). As for the introduction of schedules, on average 83% of courts in our sample were limiting noneconomic damages for personal injuries during our period of observation.

decide to move from one hospital to another in response to malpractice pressure. On the contrary, to obtain a position in a public hospital, they need to successfully pass a public selection, which then assigns them to a specific healthcare facility.

[37] When the outcome of interest is the case mix index or the entropy index, both these variables are not included in the analysis as controls.

[38] In this regard, see Section 4.4.

[39] Likewise in the previous chapter, courts' civil backlog is calculated as the ratio of new open cases during year t plus pending cases at the beginning of each new year (i.e. not solved at years $t-1$) and the closed cases during year t. Yet, if this index is greater than one, it means that the proceedings disposed by the related courthouse were less than those pending during the same year. For a discussion of the validity of the backlog index as proxy for courts' performance, see Section 4.2.2.

Table 5.1: Descriptive Statistics at the Hospital Level

Variable	**Mean**	**Std. Dev.**
Civil Backlog	3.67	1.18
Schedule	0.83	0.38
1d_admissions	0.11	0.07
Los	10.10	8.49
Po_los	4.22	2.58
Icm	0.94	0.14
Entropy	1.18	0.21
Beds_do_h	273.82	304.45
Doctors_h	149.51	180.75
N_wards	15.80	17.13
Personnel_h	797.25	988.13

Notes: *Civil backlog*=Number of new cases plus number of pending cases from the previous year out of the number of closed cases; *Schedule*=Schedules system on noneconomic damages. $1d\_admissions$=The ratio between the number of patients admitted under the one-day regime and the overall number of discharged patients; *Los*=The duration of patients' stay in the hospital expressed in days; *Po_los*=The number of days elapsed between the patient's admission date and the day of the surgery (excluded); *Icm*=The ratio between the composition of the cases treated in each hospital's ward, weighted based on the DRG system, and the weighted composition of the cases treated at the national level; *Entropy*=Measure of the heterogeneity of patients' distribution in the various DRG. *Beds_do_h*=The number of inpatient beds; *Doctors_h*=The number of doctors employed; *N_wards*=The number of hospitals' wards; *Personnel_h*=The overall number of staff employed.

The data on both the operational characteristics and the activity levels of hospitals and their wards comes from the Italian Ministry of Health. Specifically, the information on the operational characteristics consists of the number of overall personnel and doctors employed, number and type of wards, and total number of beds for inpatient care. Whilst, at the level of the single wards, we have data on the number of beds devoted to the following healthcare services: inpatient care, day-hospital care and day-surgery, as well as the number of beds actually used by each ward. On the contrary, we have the same type of information on the activity levels of both hospitals and wards. In particular, they include the case-mix index, the entropy index, the patients' overall length of stay, as well as the duration of patients stay before a surgery, and the one-day admissions.

The resulting sample comprises information on 526 public hospitals with a unique identifier observed over the period of interest, which amount to a total of 78,071 observations at the ward level.[40] During 2000-2010, 104 hospitals were placed in courts which introduced

[40]Our sample is representative since it covers 83.6% of all the public hospitals in the country, which amounted to 629 facilities for the year 2010. The data for the missing 16.4% is not available at the hospital

schedules during the period of observation (i.e. treated cases). Conversely, the remaining 422 were not treated. In fact, 355 of them are located in courts that adopted schedules for the first time before 2000, while the other 67 are under the competence of courts that never applied limits on noneconomic damages for personal injury (i.e. neither before 2000, nor during our period of interest).

As reported in Table 5.1, which provides the main descriptive statistics for the key variables considered in the analysis that follows, each public hospital has on average 16 wards[41] for an average total of 797 employees of which 149 (i.e. 18.6%) are doctors. On average, a patient spends slightly more than 4 days in the hospital before receiving surgery, whereas the average overall stay slightly exceeds 10 days. Comparing the overall and the preoperative length of stay, we obtain that on average 40% of the time spent by a patient in the healthcare facility precedes the surgery itself, thus it is preparatory to it.

Table 5.2: Descriptive Statistics at the Ward Level

Variable	**Mean**	**Std. Dev.**
1d_admissions	0.13	0.14
Los	8.98	8.29
Po_los	4.31	4.45
Icm	0.99	0.24
Entropy	1.20	0.39
Beds_dh_w	2.50	4.17
Beds_do_w	24.15	29.57
Beds_ds_w	0.24	1.21
Beds_used_w	23.32	28.52

Notes: 1*d_admissions*=The ratio between the number of patients admitted under the one-day regime and the overall number of discharged patients; *Los*=The duration of patients' stay in the hospital expressed in days; *Po_los*=The number of days elapsed between the patient's admission date and the day of the surgery (excluded); *Icm*=The ratio between the composition of the cases treated in each ward, weighted based on the DRG system, and the weighted composition of the cases treated at the national level; *Entropy*=Measure of the heterogeneity of patients' distribution in the various DRG. *Beds_dh_w*=The number of beds devoted to day-hospital care; *Beds_do_w*=The number of inpatient beds; *Beds_ds_w*= The number of beds devoted to day-surgery care; *Beds_used_w*=The number of beds actually used.

In addition, Table 5.2 displays the main descriptive statistics at the ward level, where the pre-surgery length of stay lasts on average 4 days, while the total number of days spent in a ward by patients amounts to 9. With respect to patients receiving surgery, the preoperative hospitalization accounts for 48% of the overall time spent by the patients in a

level.

[41] See, in the Appendix, Figure 5.8 on wards' distribution.

ward. On average, the complexity of the cases treated by individual wards proves to be almost perfectly in line with what happens at the national level.

As for the structure of wards, we record on average 24 beds for inpatient care and 2.5 beds for day-hospital care, while the presence of beds devoted to day-surgery activities is still very sparse. In addition, on average, the occupied patient beds almost coincide with the totality of the beds held by a ward, thus there is no evidence of extra beds capacity.

Finally, it is possible to distinguish 66 different types of wards based on medical specialty. The most common one is general surgery, as present in 62% of the public hospitals examined, followed by general medicine (61%), intensive care (61%), obstetrics-gynecology (60%), orthopedics (59%), cardiology (58%) and pediatrics (57%). On the contrary, the most infrequent type of ward in the Italian public hospitals is toxicology being present in only 3 structures of our sample. Almost as infrequent as toxicology are also immunology (9 hospitals), allergology (17 hospitals) and burn center (22 hospitals).

5.6 Results

The theoretical framework of Currie and MacLeod (2008) suggests that clinicians may vary the treatments they provide in response to a variation in medical liability. Based on the type of reaction shown by physicians, the model also clarifies whether doctors associate a higher malpractice risk with the performance of a given treatment or with its non-performance.

Table 5.3: The Expected Effects of Noneconomic Damages Schedules

Risk Tradeoff	**Expected Effect on the Procedure Use**
P riskier than NP	↑
P less risky than NP	↓

Notes: *P*=The procedure is performed; NP=The procedure is not performed. The Risk Tradeoff tells whether it is riskier for physicians to perform or to not perform a given treatment.

The framework previously described has two main implications for the present analysis. First, since both the implementation of noneconomic damages schedules and an increase in courts' civil backlog are expected to weaken malpractice pressure, consistent with the model, they are also expected to affect the decisions of doctors in the same direction. Hence, even though Currie and MacLeod's framework does not identify *a priori* the direction of the impact of schedules and judicial performance, the effects of these two features are predicted to have the same sign. Second, the model infers from the direction of the observed effects doctors' perception of the relative malpractice risk between the provision and the non-provision of a given treatment. Specifically, given that the introduction of schedules eases the litigation risk faced by clinicians, an increase in the use of a given treatment means that for doctors the performance of the treatment entails a higher probability of making a mistake, which gives rise to liability, than its non-performance. Whilst a decrease in the utilization rate of the

treatment coincides with a situation where clinicians associate a higher probability of being sued in case of an error with the decision of treating the patient rather than with that of not providing the treatment (Table 5.3). Meanwhile, no change in doctors' behavior is consistent with the hypothesis that the variation of liability constraints have affected the relative error rates of performing and not performing a treatment to the same extent or has not affected such probabilities at all.

5.6.1 Hospitals

Table 5.4 reports the main results obtained from the estimation of Equation (5.1). It shows that, after controlling for region, year, court and healthcare provider fixed effects and hospitals' characteristics, in most cases there is either no significant impact (e.g., overall length of stay) or the impact observed is a minor one (e.g., one-day admissions), but with one notable exception represented by the preoperative length of stay.

Table 5.4: Hospital Results

	1d_admissions	**Los**	**Po_los**	**Icm**	**Entropy**
OLS	(1)	(2)	(3)	(4)	(5)
Backlog	0.001	-0.018	0.045	-0.001	-0.0003
	(0.001)	(0.101)	(0.040)	(0.002)	(0.003)
Schedule	0.009*	-0.161	0.600**	-0.006	-0.011
	(0.006)	(0.675)	(0.266)	(0.013)	(0.020)
Backlog*Schedule	-0.002*	0.058	-0.153***	0.003	0.005
	(0.001)	(0.149)	(0.059)	(0.003)	(0.005)
FE	Yes	Yes	Yes	Yes	Yes
Healthcare Providers Controls	Yes	Yes	Yes	Yes	Yes
Obs	6,688	6,727	6,437	6,731	6,728

Notes: 1*d_admissions*=The ratio between the number of patients admitted under the one-day regime and the overall number of discharged patients; *Los*=The duration of patients' stay in the hospital expressed in days; *Po_los*=The number of days elapsed between the patient's admission date and the day of the surgery (excluded); *Icm*=The ratio between the composition of the cases treated in each hospital's ward, weighted based on the DRG system, and the weighted composition of the cases treated at the national level; *Entropy*= Measure of the heterogeneity of patients' distribution in the various DRG. *Backlog*= Civil Backlog; *Schedule*=Schedules system on noneconomic damages. OLS regressions. *HealthcareProvidersControls* include: Number of Beds, Personnel, Number of Doctors, Number of Wards, Average Case Mix Index, Average Entropy Index. FE=Fixed effects at the year, provider, court and geographical area level. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Specifically, this outcome variable is significantly correlated with *Schedule*. The implementation of scheduled damages leads to an increase in the duration of the preoperative length of stay. The positive sign of this effect suggests that physicians perceive a higher probability of committing an error for which they are found liable when they decide to prolong

the preoperative stay of patients rather than when they decide to shorten it.

Before performing a surgery, physicians need to monitor the patient and carry out medical examinations in order to acquire all the information on her health status that are needed for the success of the surgery and the reduction of the general risk of complications. These checks can often be performed in outpatient or day-hospital regime. Alternatively doctors can also decide to hospitalize the patient. This last option is believed to ensure a greater control on the quality of the diagnostic examinations performed. If these checks are managed under standard inpatient stay, physicians can give more precise indications on how to do the examinations, thus they can obtain more specific and targeted information. Nevertheless, the hospitalization of a patient poses the risk of hospital-acquired infections and clinicians often end up associating the preoperative stay of patients in the hospital with a higher risk of malpractice.[42] Therefore, in the presence of high malpractice pressure, despite the possible advantages, clinicians may have reasons that induce them to shorten the preoperative length of stay. If this is the case, they adopt a negative defensive behavior to protect themselves against the risk of litigation. On the contrary, once that malpractice pressure is reduced due to the introduction of schedules, clinicians are less concerned about hospitalizing patients and the risk of hospital-acquired infections. Consequently, they may be more inclined to admit patients to the hospital before the surgery and to prolong their preoperative stay in the facility.

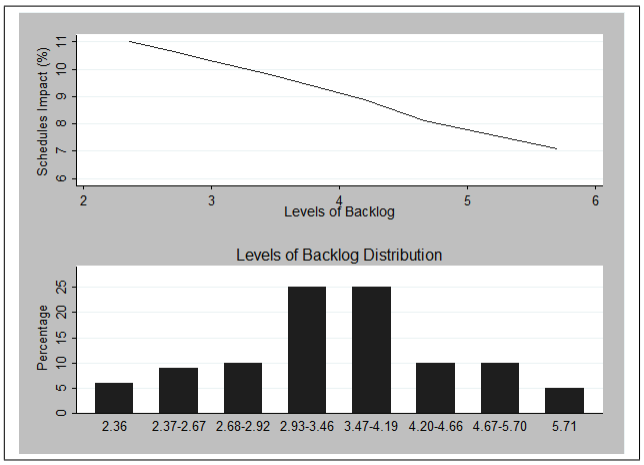
Likewise in the previous chapter, the size of the effect of *Schedule* has to be evaluated considering that it cannot be determined without jointly taking into account the level of backlog, thus it is always the sum of D (i.e. the DID coefficient) and w (i.e. the coefficient of the interaction between *Schedule* and *Backlog*) from Equation (5.1). Consequently, to appreciate the magnitude of the effects of *Schedule*, we present different simulations considering the impact of schedules implementation for different levels of *Backlog* chosen based on the percentiles of *Backlog* distribution. In order to offer a better understanding of the factual effects of this policy intervention with respect to our sample, we then plot graphs with an upper part reproducing these simulations and a lower part with the actual distribution of *Backlog* in the sample.

As a result, we see that the adoption of schedules has a positive effect on patients' preoperative length of stay, but with a decreasing trend when backlog grows. So that, when schedules are introduced in a judiciary characterized by full efficiency (*Backlog*=1), the preoperative length of stay rises by 13%. Nevertheless, the size of this effect gets smaller and smaller for increasing levels of backlog to the extent that this increase is equal to 9.2% for an average performing courthouse and to 7.4% for a very inefficient one (*Backlog*=5) (Figure 5.4). A possible pathway explaining the outlined trend is that well performing courthouses may encourage injured parties to file claims. Hence, for a given liability rule, clinicians cope with a higher risk of litigation in the case of an efficient judiciary than in the hypothesis of an inefficient one. Consequently, the reduction of malpractice pressure caused by the introduction of schedules has a stronger impact on such a context compared to a situation

[42]See, Currie and MacLeod (2008) and Frakes (2012a). In this regard, Hassan et al. (2010) find that the lengthening of patients' length of stay by one day rises the likelihood of hospital-acquired infection by 1.37%.

where doctors already face fewer liability constraints due to the poor performance of the judiciary (i.e. high level of civil backlog). The simulations performed also show that, in reality, for a substantial part of our sample a limitation in noneconomic damages through schedules leads to a lengthening of the preoperative length of stay between 10.2% and 8.5% since around 50% of courts report a backlog between 2.93 and 4.19 (Figure 5.4).

Figure 5.4: Effects of Noneconomic Damages Schedules on Hospital Preoperative Length of Stay

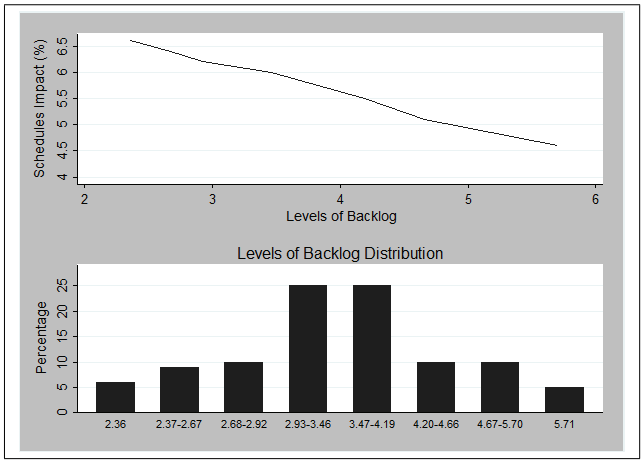


Notes: Vertical axis: Estimated impact of an increase of a standard deviation of *Schedule* (i.e. 0.38) given different levels of civil backlog on *Preoperative Length of Stay*. The impact is expressed in percentages. Horizontal axis: Levels of civil backlog.

As for the other outcomes, it is worth mentioning that schedules adoption also shows a significant effect on one-day admissions, but only at the 10% level. In particular, the more poorly performing is the court in charge of schedules implementation, the smaller is the increase in the share of patients treated under the one-day regime out of all the discharged ones. So that, for example, the introduction of schedules in a hypothetical context characterized by full efficiency would produce a 7.5% estimated increase in one-day admissions, whereas this increase would stand at 5.6% for an average performing court and at 4.7% for highly inefficient courts with a *Backlog* equal to 5. However, around 50% of the courts of our sample register an increase of one-day admissions between 6.2% and 5.3% (Figure 5.5).

According to Currie and MacLeod's model, this finding also suggests that physicians associate a higher probability of making an error leading to legal consequences with the one-day regime than standard inpatient stay. Hence, physicians seem to adopt a positive defensive behavior by opting more frequently for the standard inpatient regime when they perceive a high malpractice pressure in order to protect themselves against the risk of litigation. Conversely, once this pressure is lowered, clinicians become more inclined to move a higher

Figure 5.5: Effects of Noneconomic Damages Schedules on Hospital One-day Admissions



Notes: Vertical axis: Estimated impact of an increase of a standard deviation of *Schedule* (i.e. 0.38) given different levels of civil backlog on *One-Day Admissions*. The impact is expressed in percentages. Horizontal axis: Levels of civil backlog.

share of patients from standard inpatient stay to a less intensive treatment setting, and this can be explained as a reduction of their concern about limiting their malpractice exposure.

5.6.2 Wards

The estimated reaction at the ward level caused by a change in the liability constraints faced by clinicians is substantially in line with what we observed for hospitals. However, the refinement of the observational unit makes it possible to overcome some of the limits of the previous investigation based on healthcare facilities. Exploiting information at the ward level reduces the heterogeneity across units of observation, thus the resulting analysis measures more precisely the estimated effects and offers additional insights into the behavior of doctors in public hospitals.

Table 5.5 displays the results obtained from the estimation of Equation (5.2) and shows that the significance of some effects is blurred by the aggregation across different heterogeneous wards when the impact of schedules introduction is evaluated at the level of hospitals. In particular, one-day admissions are no longer significantly influenced by *Schedule*, but rather the effect of judicial performance prevails. Nevertheless, this relationship still results to be significant only at the 10% level.

The significant positive relation between *Schedule* and the preoperative length of stay observed at the hospital level is confirmed. Again, for clinicians, the extension of patients' hospitalization before a surgery entails a higher malpractice risk compared to a shortening

Table 5.5: Wards Results

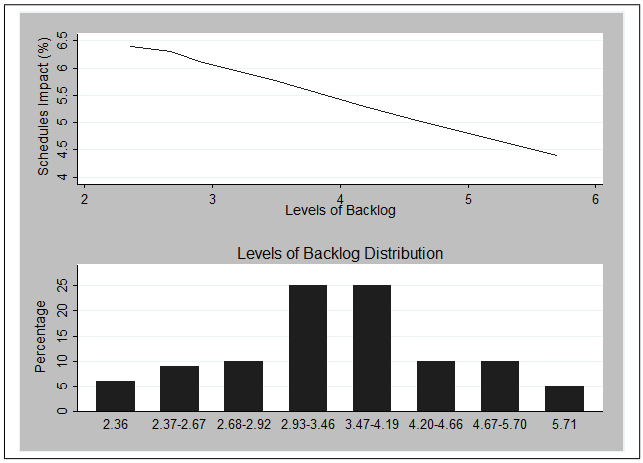
	1d_admissions	**Los**	**Po_los**	**Icm**	**Entropy**
OLS	(1)	(2)	(3)	(4)	(5)
Backlog	0.001*	-0.054	0.010	-0.002	0.001
	(0.001)	(0.037)	(0.027)	(0.002)	(0.002)
Schedule	0.006	-0.458**	0.350**	-0.009	-0.005
	(0.004)	(0.205)	(0.152)	(0.009)	(0.008)
Backlog*Schedule	-0.002	0.135***	-0.081**	0.002	0.001
	(0.001)	(0.047)	(0.035)	(0.002)	(0.002)
FE	Yes	Yes	Yes	Yes	Yes
Wards Controls	Yes	Yes	Yes	Yes	Yes
Obs	74,625	76,426	77,923	76,270	75,807

Notes: 1*d_admissions*=The ratio between the number of patients admitted under the one-day regime and the overall number of discharged patients; *Los*=The duration of patients' stay in the hospital expressed in days; *Po_los*=The number of days elapsed between the patient's admission date and the day of the surgery (excluded); *Icm*=The ratio between the composition of the cases treated in each hospital's ward, weighted based on the DRG system, and the weighted composition of the cases treated at the national level; *Entropy*= Measure of the heterogeneity of patients distribution in the various DRG. *Backlog*= Civil Backlog; *Schedule*=Schedules system on noneconomic damages. OLS regressions. *WardsControls* include: Number of Beds, Number of Beds for Day-hospital, Number of Beds for Surgery, Number of Beds for Standard Inpatient Stay, Number of Beds Used. FE=Fixed effects at the year, specialty, court and geographical area level. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

of this phase. Moreover, the reduction of malpractice pressure due to schedules adoption is perceived anew to a greater extent when this policy is introduced in a well performing judiciary than in a poor performing one. Hence, the higher the court's civil backlog, the lower the increase in the duration of the preoperative stay. This increase reaches the maximum value of 7.4% when the court is fully efficient (i.e. *Backlog*=1), while it amounts to 5.5% in case of an average performing court (i.e. *Backlog*=3.67) and to 4.5% in the case of a very inefficient court (i.e. *Backlog*=5). With respect to our sample, the prolongation of the preoperative length of stay mainly ranges between 6 and 5.1% (Figure 5.6).

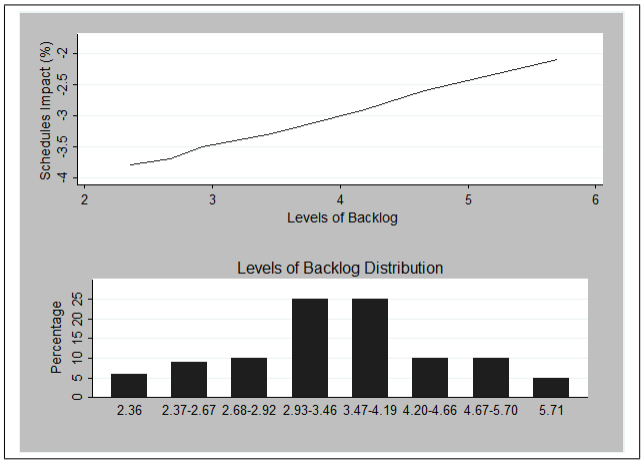
More interestingly and differently from what happens for hospitals, the overall length of stay turns out to be significantly and negatively influenced by *Schedule*. Specifically, the poorer the court performs, the shorter the stay of patients on the ward. So that, patients' length of stay is curtailed by -4.5% when the judiciary manages to dispose of all pending cases, by -3% with an average poorly performing court, and by -2.2% with an extremely poorly performing court. With respect to the actual distribution of *Backlog* in our sample, as displayed by Figure 5.7, for about half of the courthouses observed, the actual reduction of the length of stay ranges between -3.4 and -2.7%.

Figure 5.6: Effects of Noneconomic Damages Schedules on Ward Preoperative Length of Stay



Notes: Notes: Vertical axis: Estimated impact of an increase of a standard deviation of *Schedule* (i.e. 0.38) given different levels of civil backlog on *Preoperative Length of Stay*. The impact is expressed in percentages. Horizontal axis: Levels of civil backlog.

Figure 5.7: Effects of Noneconomic Damages Schedules on Ward Length of Stay



Notes: Vertical axis: Estimated impact of an increase of a standard deviation of *Schedule* (i.e. 0.38) given different levels of civil backlog on *Length of Stay*. The impact is expressed in percentages. Horizontal axis: Levels of civil backlog.

In accordance to Currie and MacLeod's theoretical framework, we can infer that physicians perceive a lower risk of committing an error that gives rise to liability when they extend patients' stay. This means that high malpractice pressure induces clinicians to extend the period of time spent by patients in the hospital providing evidence of positive defensive medicine. Hence, once malpractice pressure is lowered due to the adoption of schedules, clinicians tend to reduce the use of this defensive practice as they are less concerned about their risk exposure. These findings also suggest, that for surgical activities what actually increases is the post-treatment stay since a higher malpractice pressure would lead to a longer overall length of stay, but to a shorter preoperative one.

Finally, it is worth to mention that we do not outline any significant impact with respect to both the case mix index and the entropy index neither at the hospital level nor at the ward level. The point estimates obtained would indicate a negative relation between these two outcome variables and both *Schedule* and *Backlog*. This would suggests that, theoretically, a decrease in medical liability regardless of the cause (i.e. the introduction of schedules or poor judicial performance) determines a reduction of both these indexes. Nonetheless, the lack of significance confirms that there is no evidence of any patient discrimination (e.g. refusal to treat high-risk patients) operated by publicly employed physicians in response to a variation in malpractice pressure.

5.7 Concluding Remarks

In this chapter, we have investigated the reactions of physicians in terms of composition and intensity of treatments to variations in malpractice pressure due to both the introduction of schedules of noneconomic damages and changes in the judicial performance. Given the specific features of the Italian healthcare system, the most appropriate perspective of analysis is not the single practitioner, but rather the activity levels of hospitals and wards.

Our purpose was to examine whether, and to what extent, the implementation of schedules influences the medical decisions of doctors in terms of defensive medicine. At the same time, this allowed us also to study whether and how clinicians working for public structures are affected by malpractice pressure since this would ultimately influence how the healthcare system itself satisfies the health needs of the population. This aspect is particularly relevant also in the light of the fact that the existing literature provides mixed evidence on the defensive behavior of privately employed clinicians and the phenomenon of defensive medicine is even less obvious when analyzed in a public system. In fact, the adoption of defensive practices in such a context cannot be taken for granted since doctors working in public facilities may be affected by malpractice liability through different channels and with a different intensity compared to their privately employed colleagues. Because of this, the evidence on the U.S. experience cannot be straightforwardly extended to different contexts such as NHS based systems.

In particular, in Italy publicly employed physicians do not directly bear either the costs of liability insurance or those of malpractice litigation, therefore they may have a different perception of malpractice pressure than private practitioners. Aside from medical liability,

their conduct also faces additional constraints provided by the guidelines and internal regulations of the hospital they work for. Consequently, they not only may be differently affected by the risk of litigation, but it may also be the case that they are not willing or do not have enough discretion to adopt a relevant behavior. Moreover, the assessment of doctors' reaction to different levels of malpractice pressure in the public sector is particularly relevant and requires an *ad hoc* investigation since such a reaction can have wide consequences for public health.

In this regard, our findings have two main implications. First, we show that public providers are not neutral to variations in malpractice pressure. Our analysis highlights that there are variations in their treatment decisions at both the hospital and ward level as consequences to changes in medical liability. Second, the implementation of schedules of noneconomic damages affects both hospital and ward activity levels, determining a reduction in the use of some defensive practices on the part of doctors. However, the intensity of the effects of the reference policy is ultimately determined by the actual level of backlog characterizing the court in charge of its application. A poorer judicial performance (i.e. higher backlog) usually attenuates the effects of schedules introduction, while, by contrast, a higher level of judicial efficiency (i.e. lower backlog) tends to intensify it. When schedules are adopted in well performing courts, the subsequent loosening of liability constraints is perceived to a greater extent than when this legal change occurs in a poor performing judicial context. This happens, because a judiciary characterized by a longer processing time of trials already generates a lower degree of malpractice pressure for doctors. Therefore, a further reduction of this pressure triggers a smaller reaction of physicians.

As for the medical treatment examined, we observe a positive and significant relationship between the introduction of schedules and the preoperative length of stay at both the hospital and ward level. This positive impact of schedules adoption is always intensified by decreasing civil backlog, so that a better performing court coincides with a higher number of days spent by patients in the facility before a surgery. Consistently with the theoretical framework of Currie and MacLeod (2008), the interpretation of these outcomes indicates that, for clinicians working in public facilities, hospitalizing a patient before a surgery and/or prolonging her preoperative stay entails a higher risk of committing an error leading to liability than not doing so. Consequently, when malpractice pressure is high, physicians undertake a (negative) defensive behavior by shortening patients' preoperative stay in the hospital. Conversely, once schedules are adopted and malpractice pressure is lowered, there is a less frequent use of this defensive practice.

Differently, patients' overall length of stay is negatively affected by scheduled damages, but this relation is statistically significant only at the ward level. Moreover, this negative effect results to be attenuated by increasing civil backlog, so that a more inefficient judiciary is associated with a higher number of days spent by patients in the hospital. The negative sign of the relationship between scheduled damages and patients' length of stay also suggests that physicians face a lower error rate when they prolong the overall period of hospitalization than when they shorten it. Therefore, once malpractice pressure lowers, they tend to reduce the duration of the patients' stay. This is also consistent with the commonly held idea that doctors dealing with high liability constraints often resort to (positive) defensive medicine,

by extending patients' stay with the main purpose of reducing their malpractice exposure. In addition, consistent with our expectations, there is no evidence of a discriminatory behavior of doctors with respect to the cases they treat as no change in the case-mix index and in the entropy index emerges in response to schedules introduction.

Besides the specific considerations made with respect to the introduction of noneconomic damages schedules and judicial performance, our findings stress the complexity of the incentives faced by physicians working in public hospitals. These incentives have different sources (i.e. the medical specialization, the public hospitals doctors work for, medical liability) and their coexistence and interplay make it difficult to anticipate the general impact of a reform such as noneconomic damages schedules. In fact, it is very unlikely that such a legal change will exert the same effect on all the different branches of the medical profession. Nevertheless, from a policy perspective, the existence of the responses at the hospital and ward level to changes in malpractice pressure are particularly relevant as they may have significant consequences in terms of healthcare expenditure and of the fairness and equity of the healthcare system itself.

In particular, the goal of a public NHS is, in theory, to offer universal medical coverage to the residents of a country. Yet, one could argue that the system should be neutral to this type of forces. If this is not the case, medical services end up being determined by the place of their provision and this may threaten both the fairness and the equity of the system. In fact, in the case of Italy, even though in principle individuals can choose the provider they prefer across the entire country, the mobility of patients is actually expensive and not always feasible for people.

Policymakers should be aware of all the possible implications of malpractice reforms. They should not focus their attention solely on the desired effects for which these legal interventions are meant as malpractice reforms can actually produce additional effects beyond those for which they were conceived.

5.8 Appendix: Additional Tables and Figures

Table 5.6: Variables definition and sources

Variable	**Type**	**Definition**	**Source**
Backlog	Continuous	Number of new cases plus number of pending cases from the previous year out of the number of closed cases	IMJ
Beds_dh_w	Continuous	The number of beds devoted to day-hospital care at the ward level	IMH
Beds_do_h	Continuous	The number of inpatient beds at the hospital level	IMH
Beds_do_w	Continuous	The number of inpatient beds at the ward level	IMH
Beds_ds_w	Continuous	The total number of day-surgery beds at the ward level	IMH
Beds_used_w	Continuous	The number of used beds at the ward level	IMH
Beds_w	Continuous	The overall number of beds at the ward level	IMH
Doctors_h	Continuous	The total number of doctors employed by the hospital	IMH
Entropy	Continuous	Measure of the heterogeneity of patients distribution in the various DRG	IMH
Icm	Continuous	The ration between the composition of the cases treated in each hospital's ward, weighted based on the DRG system, and the weighted composition of the cases treated at the national level	IMH
Los	Continuous	The duration of patients' stay in the hospital expressed in days	IMH
N_wards	Continuous	The number of active wards in the hospital	IMH
Personnel_h	Continuous	The total number of staff employed by the hospital	IMH
Po_los	Continuous	The number of days elapsed between the patient's admission date and the day of the surgery (excluded)	IMH
Schedule	Dummy	Equal 1 if (and 0 otherwise): the Courthouse adopts a schedules system on noneconomic damages	Molinari (several years)
1d_admissions	Continuous	The ratio between the number of patients admitted under the one-day regime and the overall number of discharged patients	IMH

Notes: IMH= Italian Ministry of Health; IMJ= Italian Ministry of Justice.

Figure 5.8: Distribution of Hospitals Wards

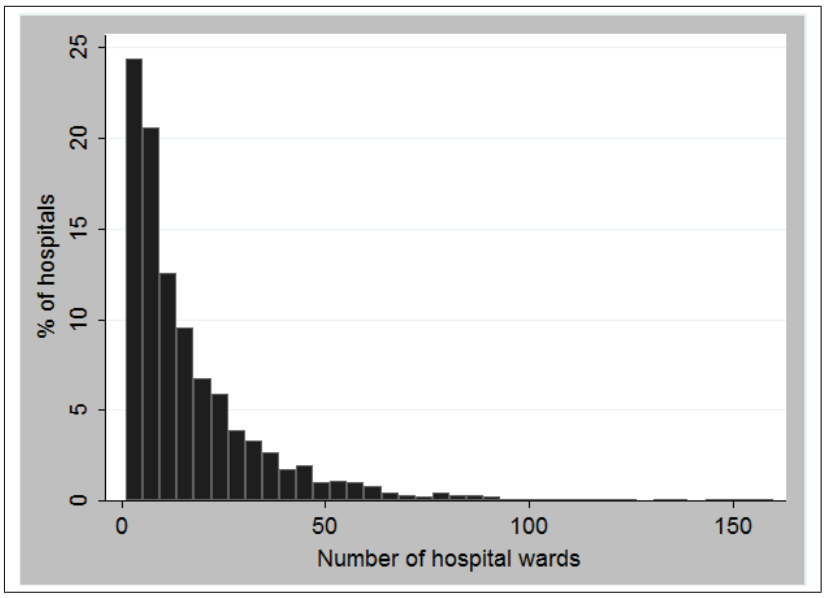
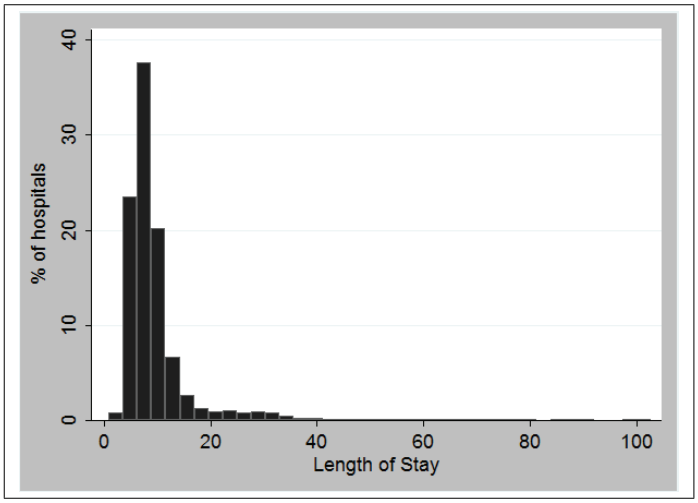
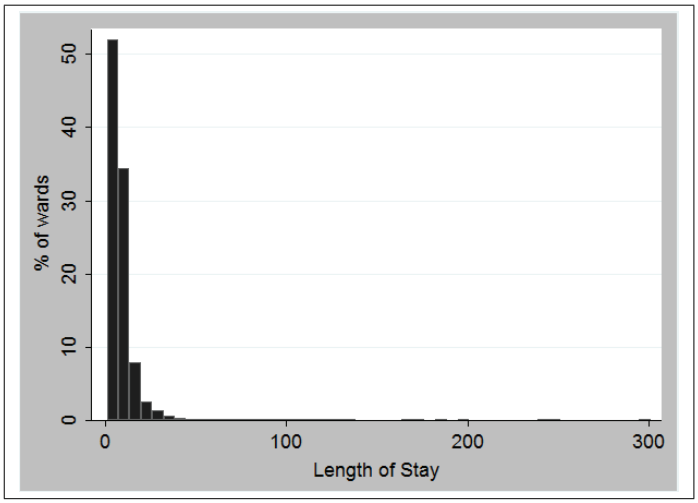


Figure 5.9: Length of Stay as Distributed across Hospitals (2000-2010)



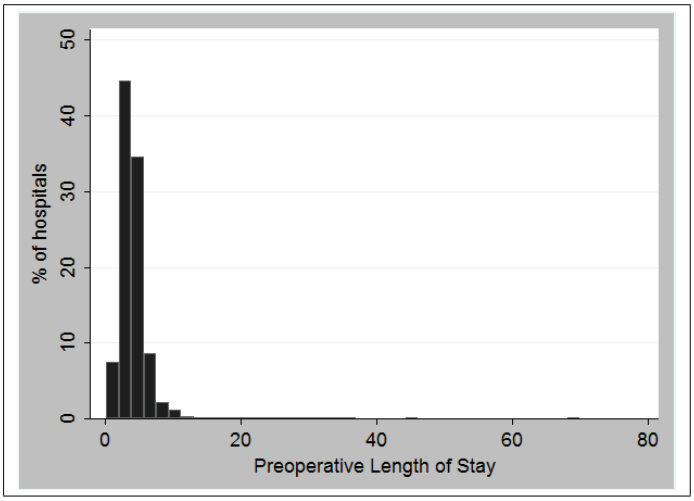
Notes: *Length of Stay*= The duration of patients' stay in the hospital expressed in days.

Figure 5.10: Length of Stay as Distributed across Wards (2000-2010)



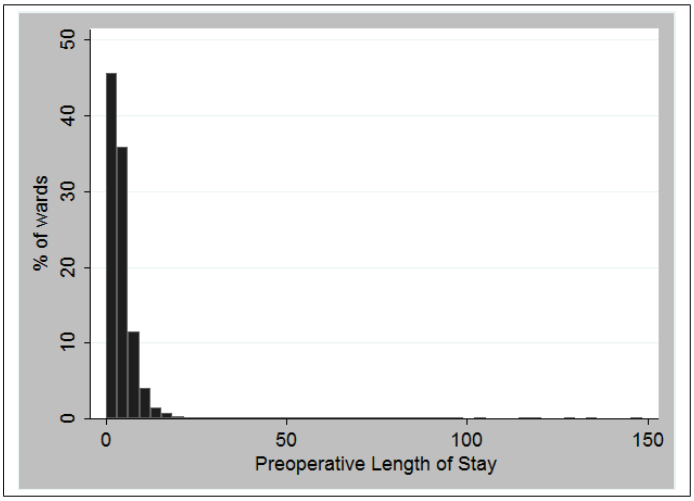
Notes: *Length of Stay*= The duration of patients' stay in the hospital expressed in days.

Figure 5.11: Preoperative Length of Stay as Distributed across Hospitals (2000-2010)



Notes: *Preopervative Length of Stay*=The number of days elapsed between the patient's admission date and the day of the surgery (excluded).

Figure 5.12: Preoperative Length of Stay as Distributed across Wards (2000-2010)



Notes: *Preoperative Length of Stay*=The number of days elapsed between the patient's admission date and the day of the surgery (excluded).

Chapter 6

Conclusions

In the last decades, medical malpractice has held a central place in both the policy agenda and the public debate. Among the general public this phenomenon raises serious concerns, because it is seen as a threat to general well-being. Individuals are concerned about being victims of medical accidents, which they perceive as a sign of low quality provision of medical care. From a policy perspective, it is a debated topic, because it can compromise the confidence of patients in the health system and it is an important determinant of healthcare expenditure and outcomes. In fact, aside from the high cost of medical professional liability coverage, medical malpractice entails negative consequences also for the cost of healthcare services, because physicians may over- or under-perform a given treatment and/or procedure for defensive reasons. As a consequence, the system may be required to bear unnecessary costs and/or offer a suboptimal response to the health needs of the population.

Clearly, the immediate effects of medical errors involve patients and healthcare providers. The former may suffers serious consequences for their health and, more in general, for their life. In turn, the latter bears the financial costs of compensating injured parties, as well as the emotional and reputational costs entailed by the involvement in a legal dispute. Still, medical accidents do not only affect these two categories, but their effects extend to the liability system, the insurance market and the healthcare system as a whole.

In particular, the increasing trend of malpractice litigation combined with the growth in damages awards reported in many different countries is usually claimed to have negatively impacted the insurance market for medical professional liability. This impact translates into negative consequences for healthcare providers and has led to strong criticisms about the liability system itself. In fact, the liability system should, first of all, provide the right incentives for clinicians to undertake a standard level of care in order to deter them from engaging in negligent behaviors. Second, once doctors fail to apply such a precaution, the system should be able to ensure proper compensation for victims. Nonetheless, the effectiveness of the liability system in performing both these tasks have been repeatedly questioned.

At the same time, the insurance market should be able to make available to healthcare providers at affordable prices, policies against third party liability. However, when it comes to real world markets, the specificities of the risk to cover (e.g. long tail and the difficult differentiation between high- and low-risk policyholders) seem to exacerbate the volatility

faced by private insurers. This, combined with the increasing severity and frequency of claims, has over time discouraged insurers from working in this segment, leading to serious problems of both availability and affordability of malpractice policies.

In turn, the difficulties in finding appropriate coverage against third party liability may ultimately impact on the provision of medical services both in term of costs and of access to medical care. Doctors may pass on to patients high malpractice premiums by increasing medical fees, but they may also adopt defensive behaviors by over-performing diagnostic and/or therapeutic treatments or by refraining from risky treatments or cases with the main aim of avoiding malpractice litigation.

Given the variety and complexity of the effects produced by medical malpractice, a wide range of policy interventions has been proposed to cope with this phenomenon. An accurate understanding of how these legal interventions work in practice is particularly important, because "*the extent to which certain reforms are or are not effective can shed light on the strategic behavior of health care providers, medical liability insurers, and litigants facing a changed legal regime. Understanding the efforts of tort reforms is also important for policy makers in their attempts to change the legal, health care, and insurance market.*"[1]

In recent years, empirical Law and Economics has devoted much attention to the investigation of the impact of malpractice reforms. Nonetheless, there is still much more to be learned and explored in order to achieve a deep understanding of these policies and of the phenomenon of medical malpractice in general. Some types of reforms have been studied much less than others, as in the case of schedules of noneconomic damages, and their effects remain highly debated. Moreover, the need for further research in this field is even more apparent in Europe, where this strand of the literature is less developed than in the U.S. and both the legal and healthcare systems have remarkable specificities that make it difficult to automatically extend the conclusions from one institutional context to the other.

In this regard, the present work contributes to the study of medical malpractice and related reforms – specifically of schedules of noneconomic damages – in a civil law country with a public national health system, using Italy as case study. This is an institutional framework that widely differs from the American one and, precisely, the choice of such a setting is one of the elements that make this analysis particularly interesting. In fact, this study does not only offer valuable insights into the effects of schedules on the decisions of both private insurers and hospitals in a public healthcare system. It also fosters the understanding of this policy in relation to a public health system and tries to shed light on the mechanisms and channels through which malpractice pressure works in such a context. Specifically, the aim has been to investigate: (i) whether schedules do actually yield the theoretical results, which are usually attributed to them with respect to malpractice insurance (i.e. increase in market attractiveness for insurers and reduction in premiums), and (ii) whether the impact of this policy goes beyond malpractice coverage, affecting also healthcare providers.

The empirical investigation of such effects benefits from a quasi-experimental design due to the scattered adoption of scheduled damages in Italy and is performed while controlling for the functioning of the enforcement mechanism of schedules, that is, mainly the judicial

[1] Avraham (2007), pp. 184-185.

system. The level of backlog of civil courts is taken as proxy of the performance of this institutional element and this issue is particularly critical in Italy, a country which is well known for its poorly performing judiciary. The argument underlying this choice is that parties involved in malpractice cases react differently to the introduction of schedules, depending on the level of performance of the enforcement mechanism of the policy itself. Insurers do not only care about improving the certainty of paid compensations, which is expected to be higher under a scheduled damages system than under a caps system. They are also affected by inefficiencies related to the timing of the payment and the deterrence level of the legal system on healthcare providers. Similarly, the degree of malpractice pressure perceived by healthcare providers is not solely determined by the level of damages they may have to compensate, but also by the willingness of victims to file a claim.

An important general lesson that can be learned from this work is that malpractice reforms – as in the case of schedules – may lead to unintended and unexpected consequences. Their effects ultimately reach several, if not all the stakeholders affected by medical malpractice, thus they may produce further effects besides those immediately foreseen by policymakers. In addition, a relevant determinant of their effectiveness may be represented by their enforcement mechanism. The final impact of these policies may be affected by the institutional context in which they are implemented. Therefore, assessing the effectiveness of these interventions without also considering the institutional framework of reference may lead to biased conclusions. These are all aspects that should be carefully evaluated by policymakers when conceiving such policy interventions.[2]

Overall, medical malpractice proves to be an extremely complex topic, which involves a multiplicity of different categories of subjects. All these groups of stakeholders can be clearly distinguished from each other, but they all coexist and the effects on one of them may also have significant consequences for the others. In this regard, the contribution of empirical Law and Economics can be of valuable assistance to provide further evidence of the dynamics of this phenomenon especially with respect to those institutional frameworks that have been less investigated to date.

Market Attractiveness

Traditionally, professional medical liability insurance has been framed as a problematic line of business for insurance companies. Over time, the distress of the sector has been channeled by (i) a skyrocketing increase in malpractice insurance rates; and (ii) the exit of some insurers and a restriction of the operational market by others, who selected the geographical area where to compete, the type of healthcare provider they are willing to cover and/or the type of coverage they offer. These phenomena have resulted in severe difficulties for healthcare providers in finding adequate coverage against third party liability.

[2]In this respect, Zeiler and Hardcastle (2012) observe, with general reference to damages caps, that "*proponents of caps continue to make claims about their impact on medical malpractice insurance premiums, and these claims continue to impact legislative outcomes and court decisions on the constitutionality of caps. It remains important, therefore, to get a solid handle on general inferences we can draw from the empirical literature that focuses on this albeit narrow question.*"

Limiting noneconomic damages has been noted among the most effective policy devices to cope with these problems. While debating the efficacy of flat and tired caps, scholars raised concerns regarding their lack of both vertical and horizontal equity of compensations, and have suggested alternative solutions such as the introduction of scheduled damages.[3] Still, to our knowledge, empirical evaluations of the impact of noneconomic damages schedules on the insurance market are not available and the possible effects of scheduled damages have been mainly inferred by looking at the evidence obtained in relation to caps and at the potential similarities with them. In particular, by containing the compensations granted to injured parties, this policy intervention is expected not only to reduce the severity of malpractice claims, but also to decrease the variance of malpractice awards. Hence, scheduled damages should ultimately improve the predictability of payouts and, therefore, make it easier for insurance companies to assess their risk exposure. If the degree of uncertainty faced by private insurers lowers, insurance companies should be able to better predict their expected future loss. The resulting possibility of a more accurate risk pricing should lead, in general, to lower premiums, but it also implies that the insurance market for medical malpractice should become more attractive for private companies as the difficulties of operating in this line are eased.

The final impact of the introduction of noneconomic damages schedules should consist in an increase in the number of insurers offering this type of coverage and in a decrease in the insurance rates paid by healthcare providers. Since Italian public healthcare facilities have the obligation to comply with the regulation on public procurement to select the insurance company, the number of companies providing malpractice insurance is expressed by the number of bidding insurers in the awarding procedures run by Italian healthcare organizations. Yet, the attainment of these results is not straightforward since it can be affected by how the schedules themselves are structured (i.e. the choice of the point monetary values) and by the functioning of the enforcement mechanism of this policy (i.e. the judiciary). In particular, a well/poor performing judicial system is expected to influence how parties involved in a malpractice case will react to the introduction of schedules. Insurance companies are interested in reducing the uncertainty and unpredictability of paid compensations, which are expected to be lower under a scheduled damages system than under a caps system, but their decisions are also influenced by inefficiencies related to the timing of payouts and by the deterrent influence of the legal system on healthcare providers. Hence, the first purpose of the present empirical investigation has been to study whether, and to what extent, schedules of noneconomic damages are effective in increasing the presence of private insurers in the reference market and in containing malpractice premiums, conditional on the performance of the judiciary in charge of their implementation.

In particular, our findings show that the effectiveness of schedules in attracting private insurers to the market for medical professional liability mainly depends on the judiciary in which this policy is enacted. Both the direction and the intensity of the impact of schedules on both proxies used to measure market attractiveness (i.e. the absolute and weighed

[3] See, for instance, Bovbjerg et al. (1989), Studdert et al. (2005), Shapiro and Rodriguez (2009), Avraham and Bustos (2010), and Mello and Kachalia (2010).

number of bidders) vary for different judicial contexts. As a result, the actual impact of schedules moves from negative to positive as judicial inefficiency rises up. So that, for a same level of schedules adoption, insurance companies end up more frequently offering malpractice insurance contracts when civil courthouses perform more poorly. In such contexts, insurers exploit the double advantage of a stronger bargaining power towards victims of malpractice, who are more discouraged in filing claims, and more certainty over the final amount of compensations to be paid. This is interpreted as evidence that, differently from other types of firms, commercial insurers take advantage of judicial environments that allow them to defer payments, since the costs for victims to file a claim are higher than in contexts where there is a more limited possibility to defer.

At the same time, schedules prove not to significantly affect the malpractice premiums paid by healthcare providers. In fact, even in cases of poorly performing courts in which schedules lead to an increase in the number of bidding insurers, healthcare providers do not benefit from this new market configuration as the increased number of competitors is not associated with a reduction in premiums. This might be due to limitations in the observational period, therefore it would be necessary to extend the period of observation. Nonetheless, it is also possible that healthcare providers are overall less likely to achieve better deals when courthouses are more inefficient. Essentially, all the effects produced by an inefficient judiciary on the subjects affected by malpractice not only make the evaluation of risk exposure more difficult for insurers, but also for healthcare providers. In addition, the difficulty encountered by healthcare facilities is even greater, because these organizations usually lack professional knowledge of the insurance sector and are less familiar with the judicial environment. As a result, the capacity of healthcare providers in determining their coverage needs is usually limited with negative consequences for their bargaining power with private insurers. A poor performing judiciary ends up exacerbating this difficulty and healthcare providers are not able to get lower premiums even when they should enjoy more leverage given the higher number of competitors in the market.

From a policy perspective, these results have important implications. First, scheduled damages do not necessarily favor insurers' participation in the malpractice insurance business, but their actual effect is determined by the judicial environment in which they are applied. In a country characterized by a high heterogeneity in terms of performance as Italy, this also means that a same policy intervention may actually yield different, if not contrasting, results in different area of the country. Moreover, the functioning of the judiciary does not only affect the impact of schedules, but it is capable alone of shaping insurers' decisions. Therefore, the possible influence exerted by the enforcing mechanism should always be included in the evaluation of this policy intervention and, more in general, policymakers cannot abstract the analysis of possible malpractice reforms from the judicial system in which these reforms are introduced.

Second, schedules of noneconomic damages do not emerge as an effective way to improve the payoff of healthcare providers. When the target is a decrease in insurance rates, policymakers should be aware that increasing market attractiveness and/or facilitating the assessment of insurers' risk exposure is not sufficient. To reduce premiums, it is necessary to improve the bargaining power of healthcare providers with respect to private insurers.

This is particularly important in public health systems, where the public insurer (i.e. the central government) can exert less control over the costs at which public providers acquired malpractice coverage. In this regard, for example, a possible intervention may consist in the implementation of monitoring systems of malpractice claims. In the case of Italy, the incentives for healthcare providers, which are the entities in charge of contracting out these insurance policies, might not be fully aligned with those of the public authorities, which actually provide the resources to pay for these expenses. Therefore, public healthcare facilities may not have enough incentives to improve the bargaining process. On the contrary, by monitoring all claims filed against a provider from the beginning to the end and in terms of both frequency of suits and levels of payouts, the providers themselves will have a greater awareness of their risk exposure. The providers would improve their capacity to evaluate the offers submitted by insurance companies and have a greater amount of information to bargain with them.[4]

Thirdly, the fact that premiums seem to remain unaffected by schedules implementation due to the low bargaining power enjoyed by healthcare providers also raises questions as to the effectiveness of the procurement procedures. The general prohibition of renegotiating bids that is foreseen by ordinary procedures (i.e. open and restricted auctions) and the limited possibility of applying negotiations constitute *per se* a constraint to the bargaining capacity of awarding authorities.[5] To facilitate the acquisition process of malpractice insurance and to increase the bargaining power of healthcare providers, it is important to improve the functioning of public procurement as well. In this respect, the European Commission launched a public consultation on the modernization of the European public procurement policy in 2011. The respondents to this public debate primarily "*complain about an "excessive level of formalization" and call for more flexibility in the conduct of the procedure, such as possibilities to contact participants in a flexible manner to clarify open issues or to discuss elements of the offer. The most frequent proposal for improvement is the general acceptance of the negotiated procedure with publication of a contract notice which is seen by many stakeholders as a simplification factor.*"[6] Hence, a possible policy intervention is to increase the possibility for contracting authorities of resorting to negotiated procedures with prior publication of a contract notice. This would ensure more flexibility and greater room for bargaining to achieve procurement outcomes that better meet the needs of awarding entities.

Hospitals Activity

Noneconomic damages schedules, as any other policy intervention curtailing compensations in malpractice cases, do not limit their possible effects on the insurance market and its players only. On the contrary, these reforms end up modifying the degree of malpractice pressure perceived by clinicians, impacting on the medical decisions of healthcare providers.

[4]On the experience of Italian healthcare providers with malpractice monitoring systems, see Amaral-Garcia and Grembi (2012). The authors show that the implementation of this policy reduced the premiums paid by healthcare providers up to 29%.

[5]On the peculiarities of procurement procedures, see Appendix B to Chapter 4.

[6]European Commission (2011), p. 10.

Traditionally, ceilings on malpractice compensations are expected to discourage injured parties from filing a suit as they reduce – at least, with respect to more severe injuries – the potential amount of money that can be awarded in the event of a medical accident.[7] Yet, once scheduled damages are applied, clinicians should face both a lower likelihood of being sued in the hypothesis of an error and a lower financial risk in the event of a legal dispute. Consequently, doctors are potentially less concerned about litigation and have less incentives to undertake – positive or negative – defensive practices. However, publicly employed physicians may actually not react, or react to a lesser extent, to such a reduction in malpractice pressure, since the incentives and constraints to which they are subject differ from those of private practitioners. In the Italian healthcare system, doctors working for public facilities do not actually bear the financial costs of malpractice litigation since hospitals themselves are responsible for providing their medical employees with coverage against third party liability. This feature, combined also with the public nature of the system, not only requires an investigation at the local healthcare provider level, but also makes the existence of a wide-hospital reaction to malpractice risk much less obvious than the response of privately employed clinicians. Furthermore, since the main determinants of the volumes of activity in Italian hospitals are public capacity and the epidemiological needs of the population, physicians can be expected to eventually have a greater effect on the organizational arrangements through which treatments are provided to patients and not on the activity volumes themselves.

Consistent with the empirical literature on defensive medicine that has traditionally reported mixed findings on the effects of caps on the behavior of doctors, our analysis provides evidence that schedules do affect the composition and the intensity of some of the treatments provided by hospitals, while there is no significant impact on other indicators. In any case, the actual magnitude of the significant effects is ultimately determined by the judicial context in which scheduled damages are enacted. A poorly performing judiciary turns out to weaken the effects of schedules introduction, whereas a well performing judiciary tends to strengthen them. When schedules are introduced in an efficient courthouse, clinicians perceive the subsequent slackening of liability constraints to a greater extent than when this legal change occurs in an inefficient context. This happens because in courts characterized by a high level of backlog, the malpractice risk perceived by physicians is already relatively low. Yet, a further reduction of this risk triggers a smaller reaction than in a context where malpractice pressure is perceived to be already higher. Again, the role played by the enforcing mechanism of malpractice reforms emerges as particularly relevant.

Specifically, the results obtained indicate that changes in malpractice pressure affect two main indicators of medical treatments: the overall and the preoperative length of stay of patients. Once schedules are implemented, physicians tend to shorten the period spent by patients in the hospital (i.e. reduction in positive defensive practices), while they tend to lengthen patients' preoperative stay (i.e. reduction in negative defensive practices). Based on the theoretical framework of Currie and MacLeod (2008), these outcomes offer interesting insights into the risk-risk trade-off perceived by physicians between deciding whether to

[7] See, Donohue III and Ho (2007).

reduce or extend both the preoperative and the overall length of patients' stay. For physicians, the choice of hospitalizing a patient or extending her stay in the facility before a surgery entails a higher probability of committing an error with possible legal consequences than the opposite decision. By contrast, the litigation risk associated with the decision of increasing the total number of days spent by a patient in the hospital is lower than the one ascribed to a shortening of the overall length of stay.

An important lesson can be drawn from this empirical investigation and the findings obtained. Due to their effects on malpractice pressure, schedules of noneconomic damages do influence the behavior of publicly employed physicians and shape to some extent their treatment decisions as a side effect. Specifically, this policy intervention has the general advantage of reducing the adoption of some defensive behaviors on the part of clinicians. However, the size of the final effect of scheduled damages is determined by the performance of the judiciary in charge of their enforcement.

At the same time, this also means that publicly employed physicians are not neutral to variations in malpractice pressure and, as a consequence, to the surrounding institutional environment. This phenomenon assumes a high policy relevance especially when it is considered within the context of a public health system. As well described by Fiorentini et al. (2008), "*National Health Service systems are based on the principle of ensuring equal opportunities of access to services with the guarantee of equal standards for equal need, irrespective of the socio-economic circumstances of the individuals and of where they live.*" However, such a mission may be disregarded due to the fact that clinicians may modify the intensity and the composition of the medical services they offer according to the malpractice environment in which they operate.

Given these considerations, it is important that policymakers scrutinize carefully all the possible consequences (i.e. intended and unintended) of malpractice reforms, including those for the provision of medical care. At the same time, these outcomes should be additional issues for discussion and consideration for policy interventions also with respect to the incentives and constraints provided by the public healthcare system to its medical employees.

Future Research

For a comprehensive view of the possible effects of schedules of noneconomic damages, future research needs to turn its attention to the litigation side. In particular, it would be interesting to investigate whether and how injured parties react to the adoption of this policy intervention. Proponents of such a legal change usually argue that scheduled damages will decrease the frequency of malpractice suits, even though there is no grounded empirical evidence in this regard. To have a deeper understanding of the dynamics triggered by schedules, the frequency of claims should not be solely measured as the number of filed lawsuits, but it should be evaluated also in relation to the disputes that received a judgment for a positive payout and to those closed without a payment. This would allow to appreciate not only the general impact of the decision of whether to sue a doctor, but also of whether scheduled damages affect differently the potential plaintiffs of unmeritorious claims and those of meritorious ones. Again, the effect of schedules regardless of their enforcing mechanism (i.e. the

judiciary) would lead to potentially biased results. Moreover, in this case, the potential role of the judicial context alone in driving the decision of victims is much more apparent than with respect, for instance, to insurance companies, thus it cannot be ignored.

Another aspect of scheduled damages that is worth investigating is their final impact on the severity of claims. As discussed in the previous chapters, one of the main alleged advantages of this policy is to foster both horizontal and vertical equity of malpractice compensations, while reducing their variability. However, their final effect depends on how they are structured and how they may affect differently, for example, the awards granted for severe injuries and those related to minor cases.

Besides the specific investigation of schedules, the study of malpractice reforms in civil law countries still remains limited. In this perspective, another important issue for future research is the impact of alternative procedures of dispute resolution. Policy interventions that encourage injured parties and healthcare providers to voluntarily discard the possibility to resort to courts offer an additional alternative path for reform. This issue may be particularly relevant for the European experience since the number of medical malpractice claims generally resolved by courts is very high in the European countries.[8] In the specific case of Italy, such a topic would be very interesting since mandatory mediation procedures have been recently introduced. As of March 2011, injured parties may initiate a legal dispute against healthcare providers only after having unsuccessfully resorted to mediation.[9] More in general, in civil law jurisdictions, little is also known about the cost of malpractice litigation, that is, how much of every euro spent on damages awards goes to administrative expenses and how much remains for victims.[10]

Finally, a possible extension of the present study would be the investigation of the potentially different role of public and private insurance on the behavior of physicians. As explained in Chapter 2, in the attempt to cope with increasing malpractice insurance rates, several Italian regional governments have switched from private insurers to different schemes of self-insurance. However, it is unclear whether these types of insurance may actually impact on the activities of hospitals. Regions resorting to self-insurance may have greater incentives to invest in monitoring systems and in improving their control over hospital activities. In this case, it may be that physicians have even less room to adopt defensive practices, or, on the contrary, they may perceive the greater control over their conduct as an increase in malpractice pressure.

Yet, in the Italian context, a serious obstacle to many of such studies is represented by the lack of publicly available data. However, the Italian case is just one example of the more general problem of data retrieval in Europe, which slows down and makes the empirical investigation of medical malpractice much harder than in the U.S. In this regard, policymakers should make an attempt to improve the accessibility, the quality and the types of information available when medical practice is concerned. There is still much to be done

[8] For instance, as already mentioned in Chapter 4, the share of malpractice claims settled in courts out of all claims amounts to 40% in Germany, 60% in France, 86% in Italy and 100% in Portugal. See, Nys (2008).

[9] See, Legislative Decree 28/2010.

[10] According to Studdert et al. (2006), in the U.S., 54 cents of every dollar spent in malpractice compensation goes to administrative expenses and other transaction costs.

and learned in this field by further improving empirical methods and the quality of the data.

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Summary

In the last decades, medical malpractice has been framed as one of the most critical issues for healthcare providers and health policy, holding a central role on both the policy agenda and public debate. Given the variety and complexity of the effects produced by this phenomenon, a wide range of policy interventions has been proposed to cope with it. The Law and Economics literature has devoted much attention to medical malpractice and to the investigation of the actual impact of malpractice reforms. Nonetheless, some types of cap have been much less empirically studied as in the case of schedules of noneconomic damages, and their effects remain highly debated. Moreover, the need for further research in this field is even more apparent in Europe, where this strand of the literature is less developed than in the U.S. and both the legal and healthcare systems have remarkable specificities that make it difficult to straightforwardly extend the conclusions drawn from the American context.

The present work seeks to contribute to the study of medical malpractice and of schedules of noneconomic damages in a civil law country with a public national health system, using Italy as case study, and at offering an evaluation of the policy implications of this investigation. Besides considering schedules and exploiting a quasi-experimental setting, the novelty of our contribution consists in the inclusion of the performance of the judiciary (measured as courts' civil backlog) in the empirical analysis. Traditionally, malpractice reforms have been analyzed regardless of the performance of their enforcement mechanism. Differently, our expectation is that the functioning of the judiciary alone is capable of influencing the main players of the malpractice system (i.e. physicians, victims and insurers), thus to condition the impact of schedules.

The empirical analysis is twofold. First, it investigates how limiting compensations for pain and suffering through schedules impacts on the malpractice insurance market both in terms of presence of private insurers in the market and of premiums applied. In other words, the first purpose of the empirical analysis is to verify whether and to what extent schedules are actually effective in achieving their expected results. Second, it examines whether, and to what extent, healthcare providers react to the implementation of this policy in terms of both levels and composition of the medical treatments offered. In this case, the main purpose is to provide additional insights on the functioning of schedules, improving the understanding of those effects that go beyond the primary scope of schedules.

Our findings show that the introduction of schedules increases the presence of insurers only in inefficient courts, while it does not produce significant effects on paid premiums. Judicial inefficiency is attractive to insurers for average values of schedules penetration of the market, with an increasing positive impact of inefficiency as the territorial coverage of schedules increases. Moreover, the implementation of schedules tends to reduce the use of defensive practices on the part of clinicians, but the magnitude of this impact is ultimately determined by the actual degree of backlog of the court implementing schedules.

Samenvatting

In de afgelopen decennia worden medische fouten gezien als een van de meest cruciale kwesties voor zorgverleners en gezondheidszorgbeleid, en hebben daarmee een centrale rol op zowel de beleidsagenda als binnen het publieke debat gekregen. Gezien de diversiteit en complexiteit van de gevolgen van dit fenomeen, is er een breed scala aan beleidsmaatregelen voorgesteld om hiermee om te gaan. De rechtseconomische literatuur heeft veel aandacht besteed aan medische fouten en aan het onderzoek van de werkelijke impact van hervormingen van het beleid op het gebied van medische fouten. Desalniettemin zijn sommige vormen van beperking van schadevergoeding veel minder empirisch onderzocht dan bijvoorbeeld in het geval van normering van immateriële schade, en hun gevolgen/effecten staan nog steeds in grote mate ter discussie. Bovendien is de noodzaak voor verder onderzoek op dit gebied zelfs nog meer aanwezig in Europa, waar dit aspect van de literatuur minder ontwikkeld is dan in de VS en waar zowel de juridische als de gezondheidszorgsystemen specifieke kenmerken hebben die ervoor zorgen dat de conclusies die uit de Amerikaanse context zijn getrokken niet rechtstreeks toepasbaar zijn.

Dit proefschrift tracht een bijdrage te leveren aan het onderzoek naar medische fouten en normering van immateriële schade in een civielrechtelijk land met een nationaal volksgezondheidsbeleid, met Italië als case study, en een evaluatie te bieden van de beleidsimplicaties van dit onderzoek. Behalve het bestuderen van normeringen en het gebruik maken van een semi-experimentele setting, ligt het vernieuwende aspect van dit proefschrift in het incorporeren van het functioneren van de rechterlijke macht (gemeten middels de vertraging bij het afdoen van civiele zaken) in de empirische analyse. Traditioneel werden hervormingen op het gebied van medische fouten onafhankelijk van het functioneren van hun handhavingsmechanisme geanalyseerd. In afwijking hiervan is het onze verwachting dat het functioneren van de rechterlijke macht op zichzelf in staat is de belangrijkste spelers op het terrein van aansprakelijkheid voor medische fouten (zoals dokters, slachtoffers en verzekeraars) te beïnvloeden, en derhalve de invloed van de normering te beïnvloeden.

De empirische analyse is tweeledig. Ten eerste wordt onderzocht hoe het beperken van de hoogte van smartengeld via normering invloed heeft op de verzekeringsmarkt inzake medische aansprakelijkheid, zowel voor wat betreft de aanwezigheid van private verzekeraars op de markt als voor de hoogte van de premies. Met andere woorden, het eerste doel van de empirische analyse is om na te gaan of en zo ja, in welke mate, normering daadwerkelijk de verwachte resultaten weet te bereiken. Ten tweede wordt gekeken of en zo ja, in welke mate, zorgverleners reageren op de implementatie van dit beleid, zowel voor wat betreft het niveau als voor de samenstelling van de aangeboden medische behandelingen. Het voornaamste doel is hier aanvullende inzichten over de werking van normering van schadevergoeding te verschaffen en hiermee het begrip te vergroten van deze effecten die verder gaan dan de primaire doelstelling van normering.

De resultaten laten zien dat de introductie van normering de aanwezigheid van verzekeraars alleen in inefficiënte gerechtshoven verhoogt, terwijl het geen significant effect op de betaalde premies heeft. Vertraging in de afdoening van zaken is aantrekkelijk voor verzekeraars bij gemiddelde waardes van normering in de markt, waarbij die vertraging een toenemende positieve invloed heeft naarmate de normering van schadevergoeding wijder verbreid is. Bovendien neigt de toepassing van normering het defensieve gedrag van clinici te verminderen, maar het te verwachten effect hiervan wordt uiteindelijk bepaald door de werkelijke achterstand van de rechter die de normering invoert.