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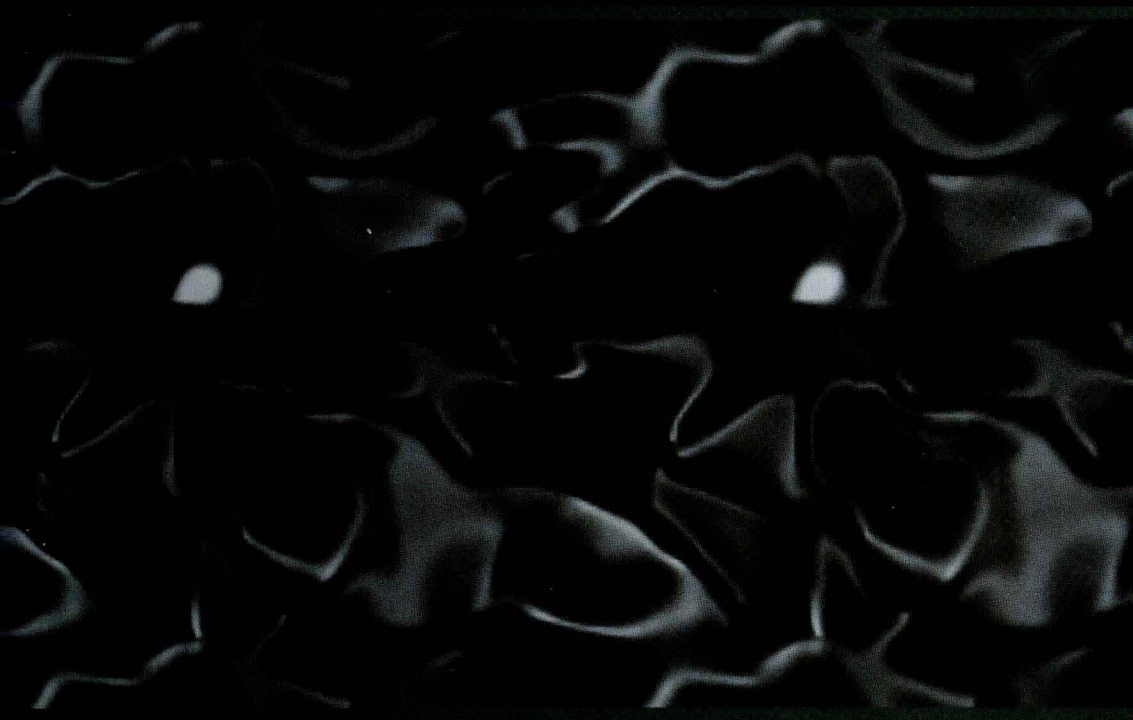
Law and Economics of Insurance

VOLUME I

Edited by **Daniel Schwarcz**



ECONOMIC APPROACHES TO LAW 32

Law and Economics of Insurance
Volume I

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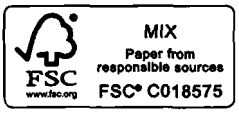

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Introduction

Daniel Schwarcz

Insurance is pervasive in both law and in economics. Consider law first. Liability insurance funds much litigation, paying for a substantial percentage of legal judgments and defense costs. In doing so, it inevitably shapes and distorts liability, influencing who gets sued, what they get sued for, how the underlying lawsuits proceed, and the ultimate effectiveness of legal rules (Abraham, 2008; Shavell, 1982; Chapter 10, Volume I). At the same time that insurance shapes the law, it is itself shaped by the law. Because the only products that insurers sell are contracts, legal doctrines governing contractual meaning and enforceability are central to the operation of insurance markets. These rules define, and often regulate, the content of insurance products (Schwarcz, 2007; Chapter 8, Volume I). Meanwhile, regulations and statutes play a similarly vital role in insurance markets, imposing various non-contractual obligations on insurers to safeguard their financial health, price their policies fairly, and pay claims promptly and reasonably.

Insurance is also a deep and important topic in economics, as evidenced by a separate volume on the topic in the Business Economics series (Niehaus, 2008). Insurance economics dates back to the 1960s and 1970s, when pioneering work used the insurance context to explore the consequences of information asymmetries between purchasers and sellers (Arrow, 1963; Rothschild and Stiglitz, 1976). Insurance economists also developed a compelling theory for why insurance is valuable to individuals in the first place, explaining it as a natural outgrowth of the diminishing marginal utility of wealth (Mossin, 1968). Gradually, these initial insights evolved into a robust literature exploring a wide range of insurance issues, including insurance financing, regulation, risk-pooling, catastrophic risk, underwriting cycles, and distribution mechanisms.

Despite the prominence of insurance in both law and in economics, the 'law and economics of insurance' is a difficult domain to define. First, insurance economics often figures centrally in debates over traditionally autonomous legal domains. This is particularly true in tort law, where a wide-ranging literature addresses both the compensation and deterrence functions of tort law through the lens of insurance economics. It is also true in health law, which routinely incorporates insurance economics into larger policy and regulatory issues. Defining the law and economics of insurance to encompass these domains risks over-breadth. Second, traditional law and economics scholarship in contract law and financial regulation often takes as its unit of analysis a domain broader than insurance. As a result, the particularities of insurance economics and institutions are often overlooked in these literatures. Third, the scholarship within the insurance economics tradition often refrains from broad public policy prescriptions or extensive consideration of normative conclusions. At least in part for this reason, this literature generally operates independently from legal scholarship.

These two volumes nonetheless attempt to bring together excellent recent contributions to these overlapping and complementary literatures, weaving together legal scholarship that relies on insurance economics or explicitly focuses on insurance markets with policy-relevant,

insurance economics scholarship.[1] Given the breadth of the underlying literatures, this enterprise is certain to exclude numerous important contributions. The goal, however, is neither to be comprehensive nor to identify the 'best' individual articles that might plausibly fall within the domain of the law and economics of insurance. Rather, it is to frame the law and economics of insurance as a coherent, albeit amorphous and contestable, field by collecting and organizing various articles drawn from a wide range of classically independent literatures. Considering these contributions as a group, consistent themes emerge.

First, and most notably, information asymmetries between insurers and policyholders figure centrally in shaping the legal rules and regulatory structures that govern insurance markets. Indeed, insurance contracts are the primary tools that insurers use to manage their limited information about policyholder risk and behavior. Courts consequently play a vital role in both supporting these efforts and limiting them when they go too far. At the same time, much insurance law and regulation is premised on information asymmetries that operate in the reverse direction, favoring insurers over policyholders. The judicial doctrines of insurance policy interpretation and construction, consumer protection insurance regulations, mandatory insurance provided via programs such as products liability law, and initiatives that seek to influence consumers' insurance preferences are all fundamentally premised on the limited information that consumers can acquire and process about insurance.

Second, and relatedly, a recurring theme in the literature is the inability of insurers to commit ex ante to optimal behavior in the absence of law and regulation. Although insurers might find it desirable to commit to paying claims fairly, settling lawsuits reasonably, and maintaining their financial strength, they often face incentives to renege ex post, once the policyholder has paid her premiums. Various forms of insurance law and regulation help to solve this problem, effectively allowing insurers to credibly sell future commitments in a way that would be impossible without such regulation.

Finally, the literature collected below displays varying degrees of skepticism about the capacity of judges, regulators, and legislatures to solve potential insurance market problems. Judges, for instance, may be excessively prone to see bad faith given their ex post perspective, while regulators and legislatures may be subject to industry capture or the unrealistic demands of the public.

The articles collected here are divided into five sections that span two volumes. The first volume begins with several articles exploring how information asymmetries can generate the twin problems of adverse selection and moral hazard, and the basic implications of these phenomena for optimal legal rules and principles. The remainder of the first volume focuses on the economics of judicial doctrines or other laws that operate primarily on insurance policies. The second volume, by contrast, collects contributions to the economics of traditional insurance regulation. It also includes selections examining the desirability of explicit and implicit public insurance markets.

Volume I

Part I: Information Asymmetries in the Law and Economics of Insurance

The first section serves as an introduction of sorts, exploring adverse selection and moral

hazard in the insurer–policyholder relationship. It begins with adverse selection, or the disproportionate tendency of comparatively high-risk individuals to purchase insurance when they have private information about their risk levels that insurers do not observe. In such cases, high-risk individuals will pay the same price for insurance as comparatively low-risk individuals, but will receive a policy with a higher expected value than low-risk individuals receive. This can result in low-risk individuals opting not to purchase insurance, which, in extreme but rare cases, can produce a 'death spiral' in which the insurance pool collapses completely.

The prospect of such adverse selection is limited to the extent that insurers underwrite risks by linking premiums or benefits to information they observe about individual policyholders. Insurers have an incentive to engage in such risk classification even in the absence of adverse selection: doing so helps them attract good risks from their competitors and thus boosts their profits. But underwriting is both costly and imperfect (Abraham, 1985; Chapter 5, Volume II). For this reason, insurers may also attempt to indirectly classify risks by offering a range of insurance policies designed to create a separating equilibrium, with low-risk insureds choosing incomplete insurance and high-risk insureds opting for more robust insurance (Rothschild and Stiglitz, 1976).

Two articles in the volume explore the legal implications of adverse selection. The first is Finkelstein and Poterba (2002; Chapter 1). It finds apparent adverse selection with respect to both individuals' decisions to purchase voluntary annuities and the specific features of the annuities that they select. Additionally, the paper nicely illustrates one of the primary policy implications of adverse selection: that government programs can offset adverse selection by forcing low-risk policyholders into the insurance pool (Baker, 2003). It does so by showing that individual annuity markets wherein purchase is made roughly (but not completely) compulsory experience substantially less adverse selection than voluntary annuity markets. The second article, by Siegelman (2004; Chapter 2), reviews a vast swath of the empirical literature on adverse selection. It concludes that lawmakers and scholars often over-emphasize the importance of adverse selection, which varies among different insurance markets and is frequently non-existent.[2] In fact, Siegelman notes that the opposite phenomenon – propitious selection – may occur if individuals select insurance because they are particularly risk averse, and risk aversion correlates with decreased risk.

Moral hazard – the deleterious impact that insurance has on policyholders' incentives to take care – is also considered in the first section. Traditional, 'ex ante' moral hazard, involves the failure of policyholders to invest optimally in precautions against a loss. Because insurance reduces, or eliminates, the costs of a loss, individuals may have little reason to spend resources or time investing in otherwise efficient precautions. For similar reasons, insured individuals will tend to invest less than optimal amounts in limiting the costs of an accident after it occurs, a phenomenon known as ex post moral hazard. Insurers have various tools to limit moral hazard. For instance, they can condition coverage on policyholders taking care or, more commonly, simply exclude coverage for losses that are indicative of a deficit in care. Alternatively, they can provide only partial insurance, using deductibles, co-payments, and policy limits to ensure that policyholders will indeed bear some burden in the event of an insured loss.

The legal implications of moral hazard are explored in two articles, the first drawn from the economics literature and the second from the legal literature. Cohen and Dehejia (2004;

Chapter 3) find that state requirements that all drivers obtain private liability insurance not only increase the rate of insured individuals, but also the rate of traffic fatalities. Insurance thus seems to reduce care levels among those who purchase insurance due to a mandate, but who otherwise would not purchase insurance. Cohen and Dehejia also find that 'no fault' auto insurance regimes – wherein insurance against automobile risks is provided primarily through first-party coverage rather than liability and third-party insurance (Keeton and O'Connell, 1965) – are similarly associated with increased traffic fatalities.

In the second article, Baker (1996; Chapter 4) explores the ways in which economists transformed the meaning of moral hazard as that concept was historically employed in insurance markets. Whereas insurers worried that insurance would impact the behavior of particular 'morally hazardous' individuals, economists suggested that insurance inevitably produces decreased care. This prediction, Baker argues, assumes that money fully compensates for loss, that individuals are in control of loss-producing behavior, and that insurance institutions do not ameliorate the incentive effects of insurance. In many cases these assumptions are not met and, even when they are, Baker notes that moral hazard can actually produce good results when activities have positive externalities or are otherwise undersupplied in the market (Nyman, 2003).[3]

Part II: Interpreting, Regulating, and Enforcing Insurance Policies

In all forms of private insurance, a contract defines the mutual obligations of insurers and policyholders. The content of this insurance policy, however, can vary significantly by line of coverage: whereas policies in property/casualty markets are typically immensely detailed about the scope of coverage, policies in health insurance markets often contain less specificity about insurers' coverage obligations, turning primarily on broad concepts such as 'medical necessity' and 'experimental treatment'. Life insurance policies also contain few details about the trigger of coverage – which is relatively easy to define – but often contain substantial details about how payouts will be calculated. A key question animating the legal treatment of insurance policies is the extent to which they ought to be interpreted or regulated in ways that differ from other types of contracts generally, or other types of 'contracts of adhesion' in particular (Stempel, 2010; Fischer, 1992).

Regardless of the extent to which insurance policies warrant distinctive treatment as a normative matter, it is clear that courts often do apply special approaches to interpreting and construing insurance policies. First, *contra proferentem*, the principle that requires ambiguities in contracts to be interpreted against the drafter, takes on central importance in insurance law, often becoming the key issue in coverage cases rather than a last resort, tie-breaker. Second, at least some courts embrace a 'reasonable expectations doctrine', whereby policyholders are entitled to coverage consistent with their objectively reasonable expectations notwithstanding policy language suggesting otherwise (Keeton, 1970). Both doctrines are motivated principally by insurers' informational advantage over policyholders with respect to the content of the insurance contract, thus flipping the information asymmetries that figure in moral hazard and adverse selection.[4] Whereas the ambiguity doctrine directs insurers to clarify coverage with increased precision in the contract, the reasonable expectations doctrine seemingly imposes broader obligations on insurers to inform consumers about limitations in coverage that they would not reasonably expect.

Abraham (1996; Chapter 5) reviews these interpretive approaches in the first article of this section, unpacking various different ways that *contra proferentem* can be understood to hold insurers responsible for ambiguities in their policy language. He argues that courts vary both in the standard of care that they impose upon insurers as well as the degree of policyholder reliance that they implicitly require to support a finding of coverage. Abraham also argues that courts often apply the more controversial reasonable expectations doctrine when they are inclined to endorse a variant of *contra proferentem* inconsistent with precedent.

Each of these variations on interpretive principles has a different impact on the incentives of insurers to clarify the scope of coverage in their contracts. According to Boardman (2006; Chapter 6), however, many of these rules end up having the perverse effect of exacerbating consumer ignorance of coverage terms, as they create network effects and path dependence that lock in complex and indecipherable policy language. The very act of interpreting a clause, she argues, makes it more valuable to insurers, who care primarily that clauses have a fixed meaning that can be priced. Consequently, insurers often retain policy language that courts deem ambiguous precisely because that determination is itself valuable, as it sets insurers' coverage responsibilities.[5]

The breadth of insurance-specific interpretive principles – particularly the reasonable expectations doctrine – can result in courts effectively regulating the content of insurance policies (Abraham, 1986). Even where courts refrain from this activist role, regulators and legislatures frequently mandate that insurance policies contain certain terms. As with more conventional interpretive principles, these judicial, regulatory and legislative insurance requirements are at least partially motivated by perceived deficits in consumer knowledge, which can lead consumers to make insurance decisions that differ from their true preferences. This risk is exacerbated by the prospect that even consumers with full information may make mistakes in their insurance decisions due to cognitive biases or heuristics (Baker and Siegelman, 2010).

Korobkin (1999; Chapter 7) explores these issues in the health insurance context, analyzing the extent to which state-mandated health insurance benefits are potentially efficient.[6] He argues that the incompleteness of health insurance contracts leads to game theoretic dynamics whereby insurers cannot commit to providing expensive care even if they would want to, essentially producing a reverse adverse selection problem whereby all insurers may become low-quality. Although insurers' interest in preserving their long-term reputations might undermine this dynamic, Korobkin argues that consumer misperceptions about the quality of the health insurance product limit this reputational effect, as does the fact that health insurers may benefit from losing the business of certain sophisticated policyholders. He concludes that legislatures are institutionally better situated than courts to solve these problems by mandating benefits, but that expert administrative bodies may be an even better option for determining optimal benefit mandates.[7]

Schwarcz (2007; Chapter 8) examines similar issues in the property/casualty context, arguing that various factors create a substantial risk that personal lines policy terms will inefficiently favor the insurer. In particular, information intermediaries routinely receive side-payments from particular insurers; consumers have limited access to insurance policy terms; insurers have the ability to collectively draft policy language; and the reputation of firms will tend to insufficiently reflect insurer coverage with respect to the most important elements of coverage (low-probability, high-magnitude losses). Schwarcz argues that the reasonable

expectations doctrine is not well suited to remedy these problems and suggests that a framework patterned on products liability law may be a more sensible approach. In particular, he proposes that courts hold insurers liable for failing to 'warn' consumers of specific coverage issues and employ explicit cost/benefit analysis to determine whether particular policy terms are 'defective'.

Of course, the vast majority of potential coverage disputes are never litigated, meaning that the impact of judicial doctrines, and potentially even statutory and regulatory rules, depends substantially on how they impact the day-to-day claims administration of insurers (Baker, 1994). There is a real risk that insurers may be over-aggressive in denying claims notwithstanding the above rules, knowing that most claims decisions will not be challenged. To the extent that a discontented policyholder threatened litigation, sought regulatory intervention, or otherwise publicized his discontent, the insurer could easily reverse course and pay the claim. Not only would such an insurer be no worse off than if it had paid the claim originally, it might well be better off if the delay in payment allowed it to earn extra investment income (Schwarcz, 2009). In order to counteract this risk, various states allow successful policyholder-litigants to receive attorneys' fees, emotional distress damages, statutory penalties, and even punitive damages. These forms of damages, which are ordinarily unavailable in contract breach cases, are usually tied to some amount of negligence, recklessness, or intentional misconduct in the insurer's denial of a claim, such that the claims decision reflected insurer bad faith.

Sykes (1996; Chapter 9) reviews these arguments for extra-contractual remedies in insurance coverage disputes, emphasizing both the delay of litigation and the fact that most aggrieved policyholders have high discount rates because they have an immediate need for funds. But he argues that allowing extra-contractual remedies to deter opportunistic breach by insurers may create more problems than it solves. This skepticism of bad faith law stems partly from Sykes' observation that courts tend to be unduly aggressive in identifying bad faith, thus producing excessive willingness by insurers to pay claims.[8] Perhaps even more importantly, Sykes sees the risks of insurer bad faith as limited, both because aggrieved policyholders can mitigate the temporal consequences of a claims denial through assignment or borrowing and because insurers have strong reputational reasons to avoid unduly aggressive claims handling strategies.

Part III: Liability Insurance

Since its genesis in the late nineteenth century, the desirability, and even enforceability, of liability insurance has proven controversial (Abraham, 2008). After all, liability insurance can be understood to undermine several of the key goals of liability, including deterring and punishing wrong doing (Baker and Griffith, 2007). At the same time, though, insurance may actually promote the goals of legal liability if insurers transmit legal incentives through mechanisms such as underwriting, experience rating, loss control, and coverage design (Shavell, 2005).

The theoretical groundwork for understanding the social desirability of liability insurance was developed by Shavell (1982; Chapter 10). He emphasizes that liability insurance protects risk-averse individuals from genuine losses both because individuals do not have full control over liability-producing behavior and because courts make errors. If insurers cannot observe

policyholders' levels of care, then this benefit must be weighed against the cost of reduced deterrence stemming from the moral hazard of liability insurance (Cohen and Dehejia, 2004; Chapter 3). Shavell demonstrates that partial liability insurance should improve social welfare in a strict liability regime. However, the demand for liability insurance in a negligence regime will depend on factors such as the accuracy of courts in applying the negligence standard.

The insurability of punitive damages has been one of the central battlegrounds in the debate over the desirability of liability insurance, with many states explicitly forbidding this form of liability insurance (Sharkey, 2005; Baker, 1998). In analyzing this issue, Priest (1989; Chapter 11) argues that courts should not adhere to a formalistic rule in determining whether liability insurance extends to punitive damages. Rather, he suggests that courts should interpret liability insurance policies to exclude punitive damages when those damages are not probabilistic or when coverage would produce moral hazard. While punitive damages are often imposed in such situations, the increasing incidence of punitive damages may gradually change this fact, Priest cautions, rendering liability insurance against punitive damages more frequently socially desirable.

Irrespective of its desirability, liability insurance is indeed commonplace. And in addition to protecting policyholders against the risk of owing a legal judgment, it also typically insures policyholders against the risk of having to pay to defend against a lawsuit. To control the risk of ex post moral hazard, insurance policies purport to give insurers absolute discretion about whether to settle a claim. But it has long been recognized that insurers may abuse this discretion, as the interests of liability insurers and policyholders may not be fully aligned.[9] For this reason, virtually every state has some form of a duty to settle, wherein insurers who fail to accept a settlement offer can be held liable for the excess judgment, and potentially additional damages such as attorneys' fees and emotional distress, if their failure to settle constituted 'bad faith'. Most states allow defendant/policyholders to assign this right to plaintiffs, usually in exchange for an agreement not to seek recovery from the defendants' personal assets, or 'blood money'.[10]

Syverud (1990; Chapter 12) provides the classic analysis of the duty to settle.[11] Although the doctrine focuses primarily on policy limits as a source of conflict between insurer and policyholder incentives, Syverud unpacks a number of other potential sources of conflict, including insurers' payment of defense costs, disparities in risk aversion, and differences in stakes beyond the amount of the settlement or judgment. Given these dynamics, courts and juries will often have difficulty properly assessing an insurer's decision not to settle ex post. Syverud therefore explores alternative regimes that place less emphasis on the reasonableness of a settlement decision but still protect policyholders. By contrast, Sykes (1994; Chapter 13) expresses more skepticism towards the duty to settle, placing greater weight on policy language granting insurers complete discretion in settlement, particularly for sophisticated policyholders.[12] Additionally, Sykes argues that the fact that defendant-insureds may be judgment-proof provides additional reason to be suspicious of judicially imposed restrictions on insurers' settlement authority.[13]

In contrast to these issues governing the enforceability and operation of liability insurance, a substantial branch of research examines how liability insurance impacts civil litigation.[14] This research demonstrates that liability insurance influences not only who gets sued and what they get sued for, but also transmits and, in some cases distorts, legal principles.[15] Two of the central contributions to this research are featured at the end of the Liability Insurance section.

First, Baker and Griffith (2007; Chapter 14) examine the extent to which insurers providing Directors' and Officers' Insurance (D & O) monitor their policyholders in a fashion that transmits the intended deterrent effects of securities laws. Surprisingly, they find that D & O insurers do not manage either ex ante or ex post moral hazard, failing to monitor corporate governance factors while insurance is in force and declining to manage litigation defense costs once claims arise. These findings raise significant questions regarding the value of D & O insurance, as risk aversion is not a plausible explanation for the value of such insurance to publicly traded firms. Additional studies by Baker and Griffith, however, suggest that D & O insurance may partially transmit the deterrence impacts of securities laws, as D & O insurers do seek to price policies according to the risk posed by prospective insureds (Baker and Griffith, 2007).

Another important set of articles exploits data from Texas on insurers' closed claims to develop a wide range of findings regarding the impact of liability insurance on law. One of these entries by Zeiler, Silver, Black, Hyman and Sage (2007; Chapter 15), rounds out Volume I. It finds that physicians' insurance decisions regarding their policy limit dramatically impact the amount of compensation that is available to injured patients, as providers rarely pay out-of-pocket for malpractice claims.[16] The paper also finds that physicians often carry less insurance than is conventionally assumed and that they are tending to carry less as time goes on. Other entries in this series of research articles offer numerous additional insights into the interactions between liability insurance and civil practice. For instance, one recent paper finds that the duty to settle importantly affects settlement dynamics, prompting faster resolution of cases and decreased attorneys' costs (Hyman, Black and Silver, 2011).

Volume II

The second volume transitions from insurance law that operates predominantly through contracts and courts to traditional, ex ante insurance regulation. Such regulation has a distinctive structure in the United States, with each individual state enjoying regulatory authority over insurance transactions that occur within its territorial boundaries (Schwarcz, 2010). After exploring the regulation of private insurers, the final section in Volume II turns its attention to public insurance programs, including both the implicit insurance that is provided by certain forms of tort liability and the explicit insurance that is provided by government programs, with a particular focus on disaster insurance.

Part I: Regulating Insurance Markets

Insurance regulation in the United States takes place predominantly at the state, rather than the federal, level, at least outside the domain of health insurance.[17] Responsibility for regulating insurance markets historically fell to the states because Supreme Court precedent defined insurance to be outside of Congress's enumerated powers. When the Supreme Court reversed this precedent, ruling that insurance is indeed 'commerce', Congress quickly passed the McCarran-Ferguson Act, affirming the primacy of state insurance regulation. In particular, the Act established that state laws relating to insurance trump federal laws of general applicability and that the business of insurance enjoys a limited antitrust exemption.[18] Presently, states

continue to regulate insurance, though their efforts enjoy significant support through the National Association of Insurance Commissioners (NAIC), an organization of state insurance regulators (Randall, 1999).

A robust literature explores the efficiency consequences of state-based insurance regulation.[19] In analyzing this issue, Macey and Miller (1993; Chapter 1) generally endorse the state-based system of regulation. They argue that a limited federal antitrust exemption is appropriate to the extent it remains tethered to protecting the aggregation and collection of actuarial data and that solvency regulation should remain at the state level while being backstopped by a federal lender of last resort. At the same time, they express concern about certain trends in state regulation – particularly rate regulation (which is explored later) and exit fee penalties (Epstein, 1999) – and suggest that limited federal preemption may be appropriate if these trends continue. Grace and Phillips (2007; Chapter 2) are less sanguine about state-based insurance regulation. They find that the patchwork system of state insurance regulation leads to various externalities, with small states free-riding off the regulatory efforts of larger states and large states tolerating this because it creates entry barriers into the state. They also find that there are economies of scale to state insurance regulation, suggesting that insurance regulation may be most efficiently provided at the federal level.

Irrespective of its design, insurance regulation is intended to serve several basic functions. The most fundamental of these is solvency regulation, or ensuring that insurers have the financial capacity to pay policyholder claims as they become due. Unlike with banking regulation, the need for prudential regulation in insurance does not stem from systemic risk concerns, as failures in traditional insurance markets do not generally pose large risks to the overall economy (Herring and Schuermann, 2005). Rather, the rationale for solvency regulation is essentially grounded in consumer protection – that policyholders must be protected from the risk that their insurer will not pay claims. Such protection is necessary for several interrelated reasons. First, policyholders pay insurers for protection before they encounter the possibility of paying a claim. Second, and relatedly, in many lines of insurance (particularly life and long-tail liability lines), the time gap between the payment of premiums and the payout by insurers can span many years, and even decades. Third, most policyholders have a limited capacity and/or willingness to continually monitor insurers' financial stability. Finally, insurers are quite susceptible to financial weakness if they fail either to diversify their policyholders' risk profiles or if they engage in destructive price competition.

The central tools of state solvency regulation in the United States are risk-based capital (RBC) requirements.[20] These rules require insurers to maintain capital levels based on various measures of risk that are specific to each insurer, including underwriting risk, asset risk, and business risk. Various prompt corrective action measures are automatically triggered when insurers fall below requisite capital measures. These capital requirements have remained largely unchanged since they were introduced in the early and mid 1990s. Since that time, they have been subject to substantial academic criticism. Cummins, Harrington and Klein (1995; Chapter 3), for instance, find that the predictive accuracy of the RBC formula for property-casualty companies is low, generating both Type 1 and Type 2 errors. They propose several modifications, including changing the weight of various factors within the formula and including the organizational form of the insurer (mutual or stock) as well as firm size. Harrington (2005; Chapter 4) echoes some of these problems with risk-based capital formulae, but suggests that the best solution may be simpler and less stringent capital rules for insurers.

This approach is sensible, Harrington suggests, because the insurance industry generates little systemic risk and is subject to substantial market discipline given the preferences of policyholders, insurers' investments in franchise value, and the issuance of debt at the holding company level, which is effectively subordinated to policyholder claims.

Another traditional role of insurance regulation is price regulation. This form of regulation is broad, and encompasses at least three quite different variants. Historically, the core purpose of price regulation was to ensure that premiums were 'adequate', as a tool of solvency regulation. This form of solvency regulation is no longer generally used, as it has been displaced by more sophisticated forms of solvency regulation, such as RBC requirements. Second, price regulation encompasses regulations designed to prevent unfair or otherwise problematic discrimination among policyholders. Recall that insurers naturally classify risks – linking observed policyholder features to premiums – both to prevent adverse selection and to increase profitability. But cost-effective risk classification by insurers can rely upon distinctions that create important negative externalities or are suspect on fairness grounds. Taken to the extreme, risk classification can undermine the value of insurance by diminishing the ability of individuals to spread risk (Crocker and Snow, 2000).

Abraham (1985; Chapter 5) provides one of the earliest and best broad analyses of these issues. He describes classification schemes as having various efficiency-related features, but emphasizes that classification is itself costly, meaning that efficient schemes only classify risks imperfectly. Partially for this reason, classification schemes also create fairness-related concerns. But government attempts to address these concerns unavoidably run counter to market incentives, meaning that state attempts to regulate classification fairness are difficult to maintain and often require significant legal interventions to be successful. Hoy and Ruse (2005; Chapter 6) build on these themes in the specific context of genetic testing, which has received increasing attention in recent years. They too describe genetic testing as involving a trade-off between fairness and efficiency, and demonstrate that simulations and existing empirical evidence suggest that the adverse selection consequences of banning the use of genetic information in insurance markets would be limited. However, they caution that the changing nature of genetic information may upset this balance, leading to more aggressive regulatory schemes or government programs to prevent a 'genetic underclass' from developing.

A third element of price regulation is regulation designed to prevent 'excessive' rates or accomplish rate suppression (Harrington, 1992). A substantial majority of economic studies of insurance markets conclude that such price regulation has significant efficiency costs and is often ineffective. In one of the most influential of these studies, Grabowski, Viscusi and Evans (1989; Chapter 7) find that the 11 states that deregulated prices in auto markets experienced reduced unit prices and decreases in the size of their involuntary markets. Among the 30 largest states, rate regulation did result in decreased rates in some states, but it also increased the size of the involuntary market and generated substantial subsidies to risky drivers. In a more recent contribution to the literature, Weiss, Tennyson and Regan (2010; Chapter 8) find that rate regulation distorts drivers' incentives by requiring low-risk drivers to cross subsidize high-risk drivers. The result is higher average loss costs and accident rates.[21]

A notable exception to the wealth of studies finding adverse consequences to rate regulation is Jaffee and Russell (2002; Chapter 9). Studying California's automobile insurance regulatory regime – which was radically reformed by a 1988 referendum – Jaffee and Russell find that rate regulation has not had any of the predicted negative effects of price regulation. It has not

resulted in abnormal levels of firm entry or exit, expanded assigned risk pools, or decreased rates of insurer profits. Some, including Jaffee and Russell, interpret these findings as supporting the idea that price regulation in insurance markets can be beneficial if properly implemented (Hunter, 2008). Most insurance economists, however, seem to interpret these results as anomalous, understanding California's experience as resulting from various unrelated changes – including a change in the laws governing bad faith and seat belt usage – that were implemented at approximately the same time as regulatory reform (Appel, 2002; Litan and O'Connor, 2009).

Insurance regulation also attempts to address market problems stemming from the fact that insurance policies are usually provided on a short time horizon, requiring renewal on a yearly basis. Annual renewal of insurance policies places substantial 'classification risk' on policyholders by requiring them to pay increased premiums for future policies if their risk level increases (Works, 1999). These problems are at their apex in the health insurance context, where observed risk-levels can change quickly and dramatically.

Pauly, Kunreuther and Hirth (1995; Chapter 10) show that, in theory, ideal market conditions could solve this problem, as insurers could offer a guaranteed renewable policy with declining premiums, such that even low-risk insureds would continue to renew rather than seeking coverage elsewhere. However, various market problems – including divergent expectations about the impact of a change in risk-status and difficulties specifying future levels of coverage – may interfere with this market-based solution. Although they do not explicitly endorse regulatory solutions, their analysis provides theoretical grounding for regulatory intervention.[22] Healthcare reform, as embodied in the Affordable Care Act (ACA), provides one potential approach to solving this problem, prohibiting medical underwriting and preexisting condition exclusions and implementing guaranteed issue and renewal requirements (Monahan and Schwarcz, 2011).

Avraham and Camara (2007; Chapter 11) highlight a different problem associated with the short time duration of most insurance policies: suboptimal investment in long-term risk mitigation. In the health context, they argue, policyholder switching among different carriers leads to a 'tragedy of the human commons', where insurers refuse to cover efficient procedures that improve policyholders' long-term health because investments in the common resource – human beings – benefit the collective as well as the insurer that covers this cost. Avraham and Camara suggest a novel approach to solving this problem, proposing mandatory participation by health insurers in a clearinghouse that would transfer funds from a policyholder's new insurer to an old insurer that invested in that policyholder's long-term health. The ACA takes a more direct, less market-driven, approach to addressing this problem: it requires all insurers and employers to cover preventive care with no cost sharing and also requires that insurers in the individual and small group markets provide policyholders with 'essential health benefits'. In the property insurance context, several prominent commentators have suggested countering deficient investment in risk-mitigation by encouraging private carriers to offer long-term property insurance (Jaffee, Kunreuther and Michel-Kerjan, 2010).

All insurance regulation described so far operates on insurers and contributors to insurance supply rather than insurance purchasers. This is hardly surprising, as traditional economic analysis assumes that consumers with complete information will make market decisions that are consistent with their best interests. According to this framework, individuals purchase insurance because they enjoy diminishing marginal utility as their wealth increases, meaning

that each additional dollar improves their well-being less than the previous dollar. However, an increasingly substantial literature challenges these assumptions. This behavioral literature has important implications well beyond insurance, but much of it explicitly focuses on insurance decisions, both because they are relatively easy to simulate in laboratory settings and because the economic explanation of insurance often produces relatively clear (and thus falsifiable) predictions about consumer behavior.[23] For these reasons, an increasingly important issue in insurance regulation is what role, if any, lawmakers should play in influencing consumers' insurance decisions (Baker and Siegelman, 2010).

Logue (2001; Chapter 12) offers an insightful analysis of these issues in the life insurance context. He argues that a substantial majority of individuals are currently underinsured relative to the baseline of their dependents being able to maintain their living standard in the event of a wage earner's premature death. Logue attributes this underinsurance at least partially to the emotional unpleasantness of contemplating dying young as well as to consumer myopia.[24] Not only does this produce results inconsistent with one's own desire to provide security to dependents, but it also produces substantial negative externalities for one's heirs. Drawing on the literature on optimal subsidy design, Logue proposes several options for improving individuals' life insurance decisions, including expanding tax subsidies, government-provided term insurance, and government subsidies.

Schwarcz (2010; Chapter 13) provides a broader framework for understanding the regulatory consequences of various 'insurance demand anomalies' described in the behavioral literature. He argues that many observed deviations from traditional economic explanations of insurance likely reflect consumer mistakes. At the same time, he suggests that some consumer behavior that does not correspond to classical economic models may actually reflect sophisticated consumer decision-making that really does improve individual welfare. Given this indeterminacy, Schwarcz proposes a spectrum of 'libertarian-paternalistic' regulatory interventions (Sunstein and Thaler, 2003) that aim to encourage presumptively welfare-maximizing insurance decisions without restricting individual choice in insurance markets.

Part II: Public vs. Private Insurance Markets

In addition to regulating insurance markets, government often plays an important role in supplying insurance. One of the most important ways it does this is by creating legal rules that require private firms to provide certain forms of insurance. Products liability law is a key example, as it operates at least in part as a form of government-mandated insurance against the risk of injury from the purchase of defective products: each consumer pays a small premium in the form of additional product costs, which firms then pay out to injured consumers in the form of legal liability.

Many law and economics scholars are critical of products liability law's insurance function, which is often also described as its compensation function. Some of the reasons for this skepticism include the fact that tort systems are less efficient than first-party insurance systems in terms of paying out 'premiums' to loss victims, limiting the delay of payment, and paying out solely for pecuniary losses (Shavell and Polinsky, 2010).[25] Epstein (1985; Chapter 14) emphasizes several additional problems with using products liability law as an insurance mechanism, focusing on the suppliers of this form of insurance – firms that manufacture and sell products. For instance, he notes that such firms are poor bearers of product risks because