Who Insures AI: Understanding the Roles of the Private Insurance Industry and How They Can Shape AI Governance

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Abstract

For insurance to serve as an alternative governance mechanism to not only manage risks, but encourage preventive, risk mitigation efforts and support broader adoption of novel technologies, coverage policies must be designed to address the known risks, without encouraging irresponsible behavior due to the presence of a safety net. Yet, many who have gestured at the importance of insurance in advancing AI governance do not necessarily have a clear or complete understanding of *how* insurers may make key determinations about insurability, risk factors, or estimations of financial compensations for AI-related harms. Understanding how insurance companies approach novel markets, like the AI industry, to determine who and what can be insured, to what extent something is or is not insured, and what risk mitigation efforts are required to secure and retain coverage will undeniably shape the field of AI. This paper lays out the different actors within the private insurance industry and briefly examines how they may influence AI development and use. The paper closes with a preview of upcoming research to further explore the relationship between the private insurance industry and AI development and adoption.

1 Background

While many have discussed and examined how artificial intelligence will impact and transform the insurance industry (4; 6), fewer have explored how the insurance industry can shape the development and adoption of AI-driven technology (9; 15). The private insurance industry maintains profitability by identifying, and sometimes creating conditions for the mitigation of, likely risk factors that might result in policy claims, as well as estimating, sometimes negotiating, what the financial costs of those risky events may be. Private insurance can function as an alternative governance mechanism to not only manage risks, but encourage preventive, risk mitigation efforts and support broader adoption of novel technologies (13; 11; 3). In the case of AI-driven technologies, the availability of insurance for AI development or use may assure users and the general public that AI use is safe - and harmful outcomes can be remediated through insurance claims - with financial cover available for mistakes or unexpected outcomes for organizations developing AI systems (9; 8).

However, for insurance to serve these important risk management and governance functions, coverage policies must be designed to address the known risks, without encouraging irresponsible behavior due to the presence of a safety net (7). Insurance also cannot operate at a financial loss, as it could jeopardize the well being of policyholders who have yet to make claims against the policy. Thus, it is necessary

to accurately estimate the premiums to assess against policyholders to account for the potential claims that may be made: the cost of the AI harms experienced by claimants. Despite the important role that insurers can play in the development, deployment, and governance of AI systems and tools, many who have gestured at the importance of insurance in advancing AI governance do not necessarily have a clear or complete understanding of *how* insurers may make key determinations about insurability, risk factors, or estimations of financial compensations for AI-related harms. Understanding how insurance companies approach novel markets, like the AI industry, to determine who and what can be insured, to what extent something is or is not insured, and what risk mitigation efforts are required to secure and retain coverage will undeniably shape the field of AI.

This paper lays out the different actors within the private insurance industry and briefly examines how they may influence AI development and use. The paper closes with a preview of upcoming research to further explore the relationship between the private insurance industry and AI development and adoption.

2   Types of Insurance Providers

Two types of insurance providers are most relevant to our examination of the insurance industry's influence of AI development and adoption/use: policies specific to AI and general liability coverage. AI-developing organizations, particularly those developing foundation or general purpose AI models, face uncertainty of creating emergent technology. The potential harms of developing and deploying new technology is unclear, as evidenced by recent claims against companies like OpenAI and Anthropic for a broad array of harms spanning the theft of intellectual property (1) to wrongful death (2). AI-using organizations face a different set of risks for which they may be liable, depending on the type of AI-powered tool being used, such as the automation of specific tasks or the reliance on "AI agents," systems designed to autonomously achieve a goal by independently making decisions to plan and perform tasks.

Meanwhile, organizations who primarily utilize AI-enabled tools, whether they are narrow purpose models or AI tools built on general purpose models, may want to offset risks associated with use of automated decision-making systems and AI tools built into other existing software they use, turning first to broader general liability insurance policies that protect businesses and non-profits against injurious events from normal business operations. While most general liability insurance explicitly carves out certain technology-related risks, like those from use of software and digital services, it is not yet clear whether the use of AI tools will be similarly excluded. Insurance policy *exclusions* are provisions that exclude specific events from policy coverage. General exclusions may be in place for all policyholders (e.g., insurance does not cover events where the policyholder knowingly misused a product) or be in place for specific policyholders to address unique risk considerations for that person or individual (e.g. a basic insurance plan not covering data breaches). In the event of such exclusions for AI tools, organizations may seek to purchase additional coverage, as they do with cyber liability insurance.

AI-developing organizations may require more robust coverage to manage the risks of innovation. In the absence of AI-specific insurance provisions, many technology companies appear to be opting for "self-insurance," or setting aside a budget to cover the costs of any liabilities that private insurers may decline to cover (5). However, self-insurance may not be an option for all AI-developing companies, particularly smaller start-up organizations. The insurance industry also has a history of developing products for niche and novel markets (8; 12). Such specialized providers are fewer in number and may limit coverage provisions to protect itself against volatility and unknown risks, while integrating more stringent underwriting processes, including in-depth audits, to confirm insurability (10).

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3 Insurance Industry Actors

For each general type of actor, we define their role in the overall scoping of insurance policies, including how they interact with other actors, and how their determinations can impact overall AI governance. Three roles are key for establishing insurance policies (both as a new product and for specific policyseekers): actuaries, lawyers, and underwriters.

3.1 Actuaries

Insurance actuaries are responsible for measuring risk and identifying recommendations for risk management practices through the use of statistical and quantitative models. They are often responsible for conducting research and identifying data points that support the development of these analytic models. Actuarial models are usually statistical models, based on historical data (if available) and assumptions, that predict the likelihood of risks manifesting under particular circumstances. For new markets (domains or geographies) where reliable and consistent data may not be available, actuaries may examine proxy data options to support their models. Actuaries support risk management by identifying factors revealed by their models that may be adjusted to mitigate those risks, including recommending ways to reduce the likelihood of adverse events. They also support the estimation of the pricing of policies by developing predictive models that assess likelihood and cost of future claim events.

In the case of AI risk, by measuring the likelihood and the impact of different types of AI risk, insurance actuaries help determine whether an insurer can profitably provide insurance products for a given risk or set of risks, and the extent and value of the coverage. The assumptions that actuaries rely on about the likelihood and frequency of risk events and claims will be crucial to whether or not AI-developing and -using companies will be insurable and under what conditions. While actuaries are trained to be capable researchers and data experts, for emerging sectors like AI where historic data is scarce, it will be necessary for AI-specific subject matter experts to provide guidance on appropriate assumptions to use to develop realistic actuarial models.

3.2 Lawyers

Legal professionals are an integral part of establishing and negotiating insurance policy frameworks, on behalf of both insurance (and reinsurance) companies and policyholders. Lawyers are responsible for negotiating the terms of the insurance policies, in consultation with the actuarial experts. For unique circumstances or prominent policyholders, like large companies, lawyers on both sides may negotiate atypical exclusions, inclusions, and controls as part of the underwriting process. Lawyers also work to ensure that insurance companies are in compliance with any regulations overseeing a field or industry.

Lawyers are also involved in negotiating the terms (and value) of financial claims made against policies. For example, in many instances, the insurer's attorneys may work on behalf of the policyholder in a legal suit to ensure that the insurance company has a favorable outcome (e.g., legal case returns a verdict in favor of the policyholder/defendant, a lower financial compensation claim amount, etc).

In the absence of a fully established insurance marketplace, as is the current case in the context of AI, lawyers play an important role negotiating bespoke insurance policies for AI-developing or -using companies (14; 3). Additionally, in the absence of clear AI regulation and related costs, lawyers are also responsible for determining whether potential claims against existing liability insurance policies are within scope. Insurance, as an industry, is itself risk conscious, if not risk averse, and is not likely to move into new risk markets that lack legal precedence or evidence clarifying liability of those new risks (16). In many cases, lawyers are involved in negotiating settlements between claimants and insurers, or between multiple insurers and reinsurance in complex cases, especially if lengthy litigation is likely to be expensive, or its outcome uncertain or at risk of setting an unfavorable

precedent. For instance, lawyers may have a role in determining and justifying whether a claim falls within a policy's coverage, and whether to go to court or recommend settlement for events that fall into ambiguous territory. Understanding the dynamics surrounding these negotiations and settlements will be important to determine how insurance companies are assessing novel AI risks, including what sources of expertise they rely on to challenge or defend against arguments that a policyholder has conformed to requisite controls such as implementing governance processes, conducting technical tests and assessments, and integrating safeguards, and provide signals around what may eventually be regulatable.

3.3 Underwriters

Insurance underwriters assess the potential risk of providing coverage for specific individuals or organizations, as well as determine what the cost for covering that policyholder should be to maintain profitable margins and liquidity requirements. Whereas insurance actuaries are responsible for developing the overall coverage guidelines or framework, insurance underwriters are responsible for applying those conceptual guidelines to actual applications for insurance coverage and shaping the resulting policies. In addition to declining coverage, underwriters can adjust premiums (the amount the policyholder pays for coverage), incorporate controls (risk management activities meant to help prevent or mitigate potential losses), or apply exclusions (events that will not be covered by the policy).

Underwriters are responsible for applying the overall guidelines determined by the insurance companies (informed by actuarial assessments) to determine who is insurable and to what extent. For AI-developing and -using organizations, underwriting may require in-depth and bespoke processes, as accurate and robust field-wide behavioral and events data are typically scarce.

4 Upcoming Research

The interplay of and determinations made by these actors within the insurance industry will determine how some of the risks associated with AI development and use are distributed across society in the form of private insurance. Whether policy provisions are made to cover or exclude AI use, and under what conditions, in general liability insurance products or AI-specific insurance products, will also transform how AI use risk is managed.

Upcoming research by the authors will explore how these actors anticipate and are already addressing the rise of AI adoption across a wide array of contexts and markets through a qualitative study of insurance professionals. Through in-depth, semi-structured interviews with insurance actuaries, lawyers, underwriters, and other professionals, the authors will examine how they are approaching uncertainties and the absence of historic data for insuring AI systems and use of AI tools, how external experts are engaged to support their processes, and what risk controls, exclusions, and other product features are expected or in development.

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