The Influence of Artificial Intelligence and Emerging Technologies on the Regulation of Insurance Companies in the U.S.: An Exemplary Analysis of California's Rate Making Law

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ABSTRACT

Insurance regulation and financial innovation traditionally do not move in the same direction. Insurance regulation, on the one hand, typically follows pre-determined and conservative objectives; chief among them, the protection of consumers through prudent insurance business and solvency thresholds. The insurance business is covered by rigid rules. Financial innovation, on the other hand, generally aims for greater efficiency and profitability. Different from regular insurance business models, artificial intelligence (AI) applications and the use of emerging technologies create significantly new implications for insurance regulation. These implications stem from both systemic and non-systemic risks. Nonetheless, the use of AI and the like also carries noticeable opportunities. These favor not only the insurance business, but are also able to underpin crucial regulatory goals. This means cheaper insurance, greater insurability, and better insurance offerings. The regulation of insurance

companies is put to test; it must sound out how to align its traditional goals with impacts of AI-driven financial innovation.

A good example of this tension is the rate making law of California, in particular, the California Code of Insurance § 1861.07. Created in 1988, it does not reflect anything close to the current technological developments. In that regard, current precedent in California mandates public inspection of all information provided by an insurance company in the context of a rate application. It expressly leaves proprietary information of the insurers aside. Consequently, this significantly ham-pers innovation and minimizes consumer protection.

Interpreting California Code of Insurance § 1861.07, this tension can be resolved through a narrowed public inspection approach. This approach allows insurance companies to rely on trade secret protection in rate filing proceedings amongst the public. However, it must be flanked by a full regulatory reporting obligation of insurers vis-à-vis the California Department of Insurance. Put differently, insurance companies are allowed to rely on trade secret protection against the public, but not against the regulator. This contests the precedent of the Supreme Court of California and the opinion of the California Department of Insurance. Both the court and the Department argued that no non-disclosure privilege is applicable under California Code of Insurance § 1861.07.

This illustrates that regulatory reform is much needed in California. The insurance business is heavily data-driven, and industry already heavily relies on AI applications. Without coherent AI insurance regulation, the sector will face unknown risks that will put insureds at risk. Therefore, regulatory laws need to be reviewed beyond California, and maybe even beyond the U.S. As a first step, this can be achieved by means of a regulatory sandbox. A regulatory sandbox is a regulatory tool that allows for financial innovation while closely monitoring negative effects on consumers, financial stability, and the like. Next, board members should be required to provide AI expertise. This can be achieved through sector specific guidelines by the Insurance Departments. Because of the various challenges and risks AI-applications carry, board members need to be able to under-stand its use as the head of each company.

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INTRODUCTION

Artificial Intelligence (AI) as a major piece within the broader context of emerging technologies has gained overwhelming popularity in scholarly work. It displays a central part of a proclaimed fourth industrial revolution focusing on information.[1] With the "globalization of information,"[2] the use of AI increased massively overall.[3] Primarily for the purpose of striving for efficiency,[4] cost reduction,[5] and overall social benefits.[6] AI accelerates the insurance industry given that it, by nature, relies heavily on extensive data collection and analysis.[7] AI promises to reveal unknown and undiscovered correlations the same as insured risks.[8]

One major element of modern societies[9] is the pooling, diversification, and shifting of risk through insurance.[10] This, in operation, increases social welfare.[11] Insurance "is one of the principal industries in the US."[12] Therefore, insurance regulation must keep track with the digitization of the insurance business. This is challenging[13] considering the different standpoints of the industry and regulators. Industry voices state that "Maya, our charming artificial intelligence bot, will craft the perfect insurance for you. It couldn't be easier, or faster."[14] Regulators note: "[T]he regulations that we have to apply to AI [are] pretty much

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1.   Shauhin A. Talesh & Bryan Cunningham, *The Technologization of Insurance: An Empirical Analysis of Big Data and Artificial Intelligence's Impact on Cybersecurity and Privacy*, 2021 UTAH L. REV. 967 (2021).

2.   Georgios I. Zekos, *AI Risk Management*, *in* ECONOMICS AND LAW OF ARTIFICIAL INTELLIGENCE, 233, 237 (Georgios I. Zekos ed., 2021).

3.   *See* GARY M. COHEN, 2 NEW APPLEMAN ON INSURANCE LAW LIBRARY EDITION § 8.10 (Jeffrey E. Thomas & Nathaniel S. Shapo eds., 2017).

4.   Mihailis E. Diamantis, *Algorithms Acting Badly: A Solution from Corporate Law*, 89 GEO. WASH. L. REV. 801, 804 (2021).

5.   Iris H.-Y. Chiu & Ernest W.K. Lim, *Managing Corporations' Risk in Adopting Artificial Intelligence: A Corporate Responsibility Paradigm*, 20 WASH. U. GLOB. STUD. L. REV. 347, 354 (2021).

6.   *See Proposal for a Regulation of the European Parliament and of the Council Laying down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts*, at 18, COM (2021) 206 final (Apr. 22, 2021). *Cf.* Janna Anderson & Lee Rainie, *Code-Dependent: Pros and Cons of the Algorithm Age*, PEW RSCH. CTR. (Feb. 8, 2017) (disputing the notion that algorithms have social benefits).

7.   Małgorzata Śmietanka et al., *Algorithms in Future Insurance Markets*, 1 INT'L. J. DATA. SCI. & BIG DATA ANALYTICS 1 (2021).

8.   *Id.* at 2.

9.   TOM BAKER ET AL., INSURANCE LAW AND POLICY: CASES AND MATERIALS 147 (5th ed. 2021).

10.   *Cf.* NATHANIEL S. SHAPO, 2 NEW APPLEMAN ON INSURANCE LAW LIBRARY EDITION § 11.01 (Jeffrey E. Thomas & Nathaniel S. Shapo eds., 2017).

11.   *Artificial Intelligence Governance Principles: Towards Ethical and Trustworthy Artificial Intelligence in the European Insurance Sector*, EUR. INS. & OCCUPATIONAL PENSIONS AUTH., https://bit.ly/3vGGzB6 (last visited Sept. 7, 2023); BAKER ET AL., *supra* note 9, at 5.

12.   Sushant K. Singh & Muralidhar Chivukula, *A Commentary on the Application of Artificial Intelligence in the Insurance Industry*, 4 TRENDS A.I. 75, 75 (2020).

13.   *Cf.* Zofia Bednarz & Kayleen Manwaring, *Insurance, Artificial Intelligence and Big Data: Can Provisions of Chapter 7 Corporations Act Help Address Regulatory Challenges Brought About by New Technologies?*, 36 AUSTRALIAN J. CORP. L. 216 (2021).

14.   LEMONADE, lemonade.com (last visited Sept. 7, 2023).

the same as they were in the mid-90s. AI use is exploding . . . and is going faster than the regulators can keep up with it."[15]

A drifting apart of insurance regulation and innovation must be avoided. This paper aims to contribute to this goal. First, it shows that the insurance sector is highly affected by AI. Current use cases span from rate making, to fraud detection, to investment advice. However, it is difficult for insurance companies to comply with regulations in the U.S. This is because U.S. insurance regulation is subject to state law. Subsequently, the paper carves out that there is no undisputed definition of AI. However, the definition within the European Commission's proposal for a regulation of AI serves as a good approach. It can also be shown that AI brings various systemic and non-systemic implications. Nonetheless, it promises to carry significant opportunities. From the regulatory point of view, the regulatory agencies in the U.S., EU, and internationally are actively working on the topic of AI and big data. Partly, they provide granular regulatory guidance regarding the use of AI. Pulling back the lens fully, the application of AI poses different risks and opportunities depending on the use case and the jurisdiction. This is why this work focuses on one example. Namely, the cooperation between Farmers Insurance and Zesty.ai in California. Farmers Insurance as the insurer utilizes the technology and data analysis of Zesty.ai as the InsurTech to offer customized fire insurance to homeowners. In this regard, one key implication stemming from the California rate making laws becomes apparent. This is the tension between broad public inspection on the one hand, and innovation and consumer protection on the other hand. The Supreme Court of California in *State Farm Mut. Auto. Ins. Co. v. Garamendi* laid down a restrictive understanding of California Insurance Code (CIC) § 1861.07. A critical assessment of this precedent and interpretation of the current law points to the opposite result. The law allows some trade secret privilege while also requires full regulatory reporting by the regulator. This favors innovation and consumer protection. CIC § 1861.07 permits a narrowed public inspection while demanding full regulatory reporting.

The findings of this work are presented in five sections. First, the paper lays a foundation as to the relevance and practical applications of AI in the context of insurance regulation in Section 0. This is followed by a concise section regarding the terminology and definitions of insurance regulation and AI in Section II. Section III assess the regulatory risks just as one would the results stemming from these practical findings. Because of the great influence of regulatory and supervisory agencies in this context, the approach taken by the National Association of Insurance Commissioners (NAIC), the European Insurance and

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15. *Zesty AI and California Department of Insurance Speak at APCIA's 2021 Virtual Western Region General Counsel Conference*, ZESTY.AI, https://zesty.ai/news/zesty-ai-and-california-department-of-insurance-speak-at-apcias-2021-virtual-western-region-general-counsel-conference (last visited Sept. 7, 2023).

Occupational Pensions Authority (EIOPA), and the International Association of Insurance Supervisors (IAIS) are summarized in Section IV. Section V shows how AI is used and its subsequent implications through an example subject to California insurance regulation, in particular, rate making under Proposition 103. Lastly, this piece concludes in Section VI with a discussion of possible future regulatory developments.

I.   RELEVANCE AND PRACTICAL APPLICATIONS

The insurance sector has always been data driven and determined[16] because of the particularities of the insurance product. It unequivocally deals with uncertainties of future developments.[17] Therefore, the insurance sector has large amounts of regulatory data available.[18] This availability is increasing given modern big data analysis tools.[19] The sector faces a technological change with the widespread use of big data.[20] As EIOPA points out, "[d]igitalisation is changing the whole insurance value chain"[21] and the use of AI by insurance companies requires both regulation and supervision.[22] AI has the ability to revolutionize the processes once limited to human "quantitative and pattern recognition capabilities."[23]

Practically, AI is used for behavioral and predictive data analysis regarding pricing and risk selection, risk assessment, and claim identification.[24] AI also can be applied for credit risk modeling, detection of fraud,[25] money laundering,

16.   COHEN, *supra* note 3; Shanique Hall, *How Artificial Intelligence is Changing the Insurance Industry*, NAT'L ASS'N OF INS. COMM'RS & THE CTR FOR INS. POL'Y & RSCH.: CIPR NEWSLETTER 5 (Aug. 2017), https://bit.ly/3v6ys1G; BAKER ET AL., *supra* note 9, at 14, 17; Gabriel Bernadino, *Digital Responsibility and the Role of Actuaries: Annual Conference of the German Association of Actuaries,* (Apr. 29, 2020), https://bit.ly/3OzqK7S.

17.   Talesh & Cunningham, *supra* note 1, at 978.

18.   Adedayo Banwo, *Artificial Intelligence and Financial Services: Regulatory Tracking and Change Management*, 10 J. SEC. OPERATIONS & CUSTODY 354, 357 (2018). *See also* Bart van Liebergen, *Machine Learning: A Revolution in Risk Management and Compliance?*, 45 J. FIN. TRANSFORMATION 60, 61 (2017).

19.   Bernadino, *supra* note 16.

20.   *See Issues Paper on the Use of Big Data Analytics in Insurance*, INT'L ASS'N OF INS. SUPERVISORS (Feb. 26, 2020), https://bit.ly/39dqo6T; Bednarz & Manwaring, *supra* note 13, at 218; Robert D. Helfand, *Big Data and Insurance: What Lawyers Need to Know and Understand*, 21 J. INTERNET L. 1, 3, 8 (2017).

21.   *Report on Best Practices on Licencing Requirements, Peer-to-Peer Insurance and the Principle of Proportionality in an Insurtech Context*, EUR. INS. & OCCUPATIONAL PENSIONS AUTH. 25 (2019), https://bit.ly/37zsP3k; *Issues Paper on Increasing Digitalisation in Insurance and Its Potential Impact on Consumer Outcomes*, INT'L ASS'N OF INS. SUPERVISORS (Nov. 2018), https://bit.ly/3y3KWt5.

22.   EUR. INS. & OCCUPATIONAL PENSIONS AUTH., *supra* note 11, at 13.

23.   Samuel Lewis, *Insurtech: An Industry Ripe for Disruption*, 1 GEO. L. TECH. REV. 491, 497 (2017).

24.   Śmietanka et al., *supra* note 7, at 5.

25.   Helfand, *supra* note 20, at 11; Lewis, *supra* note 23, at 497; Rick Swedloff, *The New Regulatory Imperative for Insurance*, 61 B.C. L. REV. 2032, 2072 (2020).

surveillance of conduct breaches,[26] or for investment advice.[27] Similarly, AI is also used in operational management level decision.[28] Moreover, it has been emphasized that in the context of underwriting,[29] namely optimized risk pooling[30] and prizes,[31] claims activities,[32] and predictive models,[33] AI-based solutions fit in. That is also the case with respect to marketing and advertising in combination with price optimization.[34] It allows insurance companies to offer an improved customer experience.[35] In this same vein, AI-driven chatbots[36] became important in the underwriting process and to help market insurance products. Chat-bots are fundamentally relevant for the InsurTech[37] industry, where AI bears significant business and competition advantages.[38] AI enables smaller market participants to achieve the same or even better predictive results compared to its bigger counterparts.[39]

Additionally, AI can be used for regulatory reporting or machine readable and convertible regulations.[40] These both fall under the broader topic of RegTech[41] and SupTech.[42] Regarding the use of AI in the operational management, it has been stressed that applying black-box AI within the decision-making process raises suspicions of regulators and supervisors.[43]

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26. *Cf.* Najmeddine Dhieb et al., *A Secure AI-Driven Architecture for Automated Insurance Systems: Fraud Detection and Risk Measurements*, 8 IEEE ACCESS 58546, 58547 (2020) (showing examples of application). *See also* Sushant K. & Chivukula, *supra* note 12, at 76.

27. *See* Jon Truby et al., *Banking on AI: Mandating a Proactive Approach to AI Regulation in the Financial Sector*, 14 L. & FIN. MKTS. REV. 110, 112 (2020).

28. Helfand, *supra* note 20, at 11.

29. *Id.* at 9; Talesh & Cunningham, *supra* note 1, at 1002.

30. Lewis, *supra* note 23, at 495.

31. Helfand, *supra* note 20, at 9 ("'price optimization'").

32. COHEN, *supra* note 3; Helfand, *supra* note 20, at 21 et seq.

33. *Cf.* Swedloff, *supra* note 25, at 2033.

34. Helfand, *supra* note 20, at 19 et seq.

35. Hall, *supra* note 16, at 2. *Cf.* Truby et al., *supra* note 27, at 113.

36. COHEN, *supra* note 3; Hall, *supra* note 16, at 5.

37. COHEN, *supra* note 3; Lewis, *supra* note 23 at 492.

38. *Summary Report of the EU-US Insurance Dialogue Project: Big Data Working Group*, EUR. INS. & OCCUPATIONAL PENSIONS AUTH. 3 (3 Mar. 2020), https://bit.ly/3MnUUsR [hereinafter *EU-US Insurance Dialogue Project*]

39. *Cf.* Helfand, *supra* note 20, at 11 (claiming that financial innovations, e.g., techniques for predicting losses, increase the efficiency of managing reserves or estimating reinsurance needs).

40. Banwo, *supra* note 18, at 359. *See generally* Alison Lui & George W. Lamb, *Artificial Intelligence and Augmented Intelligence Collaboration: Regaining Trust and Confidence in the Financial Sector*, 27 INF. & COMM. TECH. L. 267, 282 (2018).

41. *Cf. Artificial Intelligence and Machine Learning in Financial Services: Market Developments and Financial Stability Implications*, FIN. STABILITY BD. 20 https://bit.ly/3k5OVNu (last visited Sept. 7, 2023); Cohen, *supra* note 3; Philip Treleaven & Bogdan Batrinca, *Algorithmic Regulation: Automating Financial Compliance Monitoring and Regulation Using AI and Blockchain*, J. OF FIN. TRANS., 14 (2017).

42. *Digital Transformation Strategy: Promoting Sound Progress for the Benefit of the European Union Economy, Its Citizens and Businesses*, EUR. INS. & OCCUPATIONAL PENSIONS AUTH. 13 (Dec. 10, 2021), https://bit.ly/3oVQOSh; FIN. STABILITY BD., *supra* note 41, at 21 et seq.; INT'L ASS'N OF INS. SUPERVISORS, *supra* note 21, at 29.

43. Helfand, *supra* note 20, at 2.

In sum, the insurance sector is highly affected by AI. Despite this, it needs to be mentioned that the insurance industry is nonetheless generally rather averse to change,[44] and when changing, slow to adapt.[45]

II.   TERMINOLOGY AND DEFINITIONS

A. General Principles of Insurance Regulation

Insurance regulation in the U.S. is unique, primarily because the McCarran-Ferguson Act[46] (15 U.S.C. § 1012(a)) subjects insurance to state regulation.[47] Consequently, this opens the field for 50 more or less different[48] regulatory schemes.[49] Typically, a state insurance department with an insurance Commissioner as head of the authority is responsible for overseeing such schemes,[50] such as the filing of new insurance rates.

The regulation of insurance businesses is pivotally important. First, the insurance sector significantly impacts the overall societal framework.[51] Second, history has shown that it needs regulation to prevent market failures and to equalize the differential between insurance companies and insureds.[52] In that sense, insurance has significant positive effects on societies while being hard to grasp on the consumer side because of cognitive and behavioral limits.[53]

The goal of insurance regulation is to secure the solvency of the companies and policyholder protection.[54] Further, it intends to maintain efficient and fair markets (the latter at least to some extent).[55] After all, rigid insurance regulation is important to ensure good quality of the insurance product and the insurance

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44. *Cf.* Hansjörg Albrecher et al., *Insurance: Models, Digitalization, and Data Science*, 9 EUR. ACTUAR. J. (2019), at 349, 350.

45. Swedloff, *supra* note 25, at 2075.

46. *See* BAKER ET AL., INSURANCE LAW AND POLICY, *supra* note 9, at 161.

47. *Cf.* Nathaniel S. Shapo, 2 NEW APPLEMAN ON INSURANCE LAW LIBRARY EDITION §11.20 (Jeffrey E. Thomas & Nathaniel S. Shapo eds., 2017).

48. RAYMOND A. GUENTER & ELISABETH DITOMASSI, FUNDAMENTALS OF INSURANCE REGULATION: THE RULES AND THE RATIONALE 31 (2017).

49. *Cf.* Helfand, *supra* note 20, at 3, regarding the relevance of state-level regulation.

50. GUENTER & DITOMASSI, FUNDAMENTALS OF INSURANCE REGULATION, *supra* note 48, at 25.

51. Helfand, *supra* note 20, at 2.

52. BAKER ET AL., INSURANCE LAW AND POLICY, *supra* note 9, at 11.

53. *Id*. at 147 et seq.

54. *Id*. at 163; *See also* Lukas Böffel, VERSICHERUNGSKONZERNRECHT 9 (2022) (presenting a European Union perspective); Lukas Böffel, *Solvency II and the Search for the Legal Purposes of the VAG: Determining the Legal Purpose Under Historical and Current Aspects*, 107 ZVERSWISS 333 (2018).

55. BAKER ET AL., INSURANCE LAW AND POLICY, *supra* note 9, at 146.

companies.[56] In doing so, it covers licensing, solvency, rate making, form, access and availability or market conduct[57] with a broad mandate.[58]

As said, the federal level only provides some regulations,[59] such as those regarding taxation or health insurance. Also, the supervision of Systematically Important Financial Institutions (SIFI) by the Financial Stability Oversight Council (FSOC) introduced with the Dodd-Frank-Act[60] is subject to federal regulation. Next to that, the NAIC[61] plays a significant role on federal level as a private organization which was founded by the insurance state regulators in the attempt to equalize the frictions evolving from the lack of uniformity of the U.S. state regulation system.[62] It achieves great impact[63] regarding its model laws designed for adoption by the states.[64] In the end, its role and influence is significantly bigger than the one of the Federal Insurance Office (FIO),[65] which was founded by the Dodd-Frank-Act.

B. Concept and Definition of Artificial Intelligence

Turning to the concept and definition of AI, scholars disagree as to what defines AI and what it comprises.[66] From the plain wording, AI is composed of "artificial" and "intelligence." The former does not really need much explanation,[67] but it is the latter which raises tempers.

A pragmatic approach is to think of AI as a machine performing tasks for which a human would need to rely on intelligence.[68] This, of course, leaves questions as to what can be perceived as humanly intelligent behavior. Also, it is quite circular to define intelligence by means of itself. Attempting to define AI

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56. *Id.* at 147.

57. *Id.* at 142. *Cf.* COHEN, 2 NEW APPLEMAN ON INSURANCE LAW LIBRARY EDITION § 8.02 (Jeffrey E. Thomas & Nathaniel S. Shapo eds., 2017).

58. *Id.*

59. *Cf.* Guenter & Ditomassi, FUNDAMENTALS OF INSURANCE REGULATION, *supra* note 48, at 37.

60. H. C. Boehning, *USA, in* INSURANCE & REINSURANCE LAWS AND REGULATIONS (ICLG ed., 2021).

61. *See* Guenter & Ditomassi, FUNDAMENTALS OF INSURANCE REGULATION, *supra* note 48, at 26.

62. *Cf.* COHEN, *supra* note 57.

63. Guenter & Ditomassi, FUNDAMENTALS OF INSURANCE REGULATION, *supra* note 48, at 26–27.

64. *See* COHEN, *supra* note 57.

65. *Cf.* Guenter & Ditomassi, FUNDAMENTALS OF INSURANCE REGULATION, *supra* note 48, at 28 et seq.

66. Yavar Bathaee, *The Artificial Intelligence Black Box and the Failure of Intent and Causation*, 31 HARV. J. L. & TECH., 889, 898 (2018); Philipp Hacker, *AI Regulation in Europe* 5 (Mar. 20, 2020) (working paper) (available on SSRN), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3556532); Michael Hilb, *Toward Artificial Governance? The Role of Artificial Intelligence in Shaping the Future of Corporate Governance*, 24 J. MGMT. & GOV'T 851, 852 (2021); Truby et al., *supra* note 27, at 111. *See also* Christian Armbrüster, *Digitalisierung Und Nachhaltigkeit – Rechtliche Herausforderungen Für Den Versicherungssektor, Insbesondere Beim Einsatz Von Künstlicher Intelligenz*, 111 ZVERSWISS 19–20 (2022).

67. Truby et al., *supra* note 27, at 111.

68. FIN. STABILITY BD., *supra* note 41, at 4, 35; Ronald Yu & Gabriele S. Alì, *What's Inside the Black Box? AI Challenges for Lawyers and Researchers*, 19 LEGAL INFO. MGMT. 2 (2019).

raises multiple societal, political, ethical, technical, and legal questions, which cannot be answered here (if at all) in a comprehensive manner.

Nonetheless, a comprehensive working definition can be found in the European Commission's proposal for the regulation of AI, which the EIOPA criticized for its broadness.[69] Accordingly, AI is to be understood as a toponym for an entire "family of technologies"[70] and that it "is more than just an algorithm."[71] Consequently, there is no such thing as one AI. Instead, multiple technological systems may fall under the term. Interestingly, following the Presidency Compromise text, AI used for premium setting, underwritings, and claims assessments shall even be considered as high-risk AI with an accordingly strict regulation.[72]

According to the current draft of Art. 3 para. 1 of the European Commission's proposal on an AI regulation in the EU, an AI (system) "means software that is developed with one or more of the techniques and approaches listed in Annex I and can, for a given set of human-defined objectives, generate outputs such as content, predictions, recommendations, or decisions influencing the environments they interact with." Annex I of the European Commission's proposal lists, among others, machine learning approaches, including supervised, unsupervised, and reinforcement learning. Further, it also mentions deep learning, logic and knowledge-based approaches (including reasoning and expert systems, the same as statistical approaches), and search and optimization methods.[73]

Admittedly, this definition is rather broad; it includes a wide array of potential AI systems. However, it is also concise regarding the working types of the software in question. Naturally, this leaves questions and poses ambiguities. Because this field is extremely volatile, the current wording of Art. 3 para. 1 of the European Commission's will be applied hereafter.

It needs to be mentioned, however, that this definition is not likely to survive the legislative process. Despite constant criticism from European agencies such as EIOPA, there are indications that the definition might be converged or even

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69. European Commission, *supra* note 6. *Cf*. EUR. INS. & OCCUPATIONAL PENSIONS AUTH., *Letter to co-legislators on the Artificial Intelligence Act*, 2022, at https://https://bit.ly/3AGcuoq (accessed Sept.7, 2023).

70. European Commission, *supra* note 6; Bednarz and Manwaring, *supra* note 13, at 5.

71. Charlotte A. Tschider, *Beyond the "Black Box"*, 98 DENV. L. REV. 683, 693 (2021).

72. Hall, *supra* note 16, at 3; Council of the European Union Interinstitutional File 2021/0106(COD), Proposal for a Regulation of the European Parliament and of the Council laying down harmonised rules on artificial intelligence (Artificial Intelligence Act) and amending certain Union legislative acts – Presidency compromise text (Nov. 29, 2021).

73. *Annexes to the Proposal for a Regulation of the European Parliament and of the Council Laying down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts*, COM (2021) 206 Final (2021) (Apr. 21, 2021).

aligned with the one used by the Organisation for Economic Cooperation and Development (OECD).[74]

In terms of practical applications of AI, one will find the distinction between narrow, general, and super AI.[75] Albeit, it is widely agreed that, for now, there is no AI conceived as general or super AI.[76] Narrow AI, however, are systems taking over specific tasks after being trained with rules and extensive data.[77]

Against this background, Machine Learning (ML), Deep Learning (DL), expert systems, and optimization methods are prominent technological examples of AI. Among these, a special emphasis lays on ML[78] and DL being the most sophisticated and promising AI systems regarding big data pattern analysis and prediction outlooks. ML describes "an approach to computing in which the solution to an optimization problem is not coded in advance, but is derived inductively by reference to data."[79] In that sense, "rules are developed from data and answers."[80] DL "involves running multiple layers of representation of the data in series"[81] "mimicking the human mind."[82]

ML and DL systems can work on different levels of sophistication: supervised learning, unsupervised learning, and reinforcement basis.[83] Supervised learning describes a process in which an AI is fed with labeled training data which is then used to figure out the best way to predict a certain pre-determined outcome.[84] This trained AI system is confronted with a new data set to evaluate the predictive power amidst the original training data. This is then subject to human review.[85] Unsupervised learning describes a program that identifies patterns from unstructured and unlabeled data sets to learn a concealed map.[86] Due to the lack of supervision, the setup of the program is even more important to receive useful results.[87] Lastly, reinforcement works on a trial-and-error basis. The system improves due to rewards received when finding the very specific, pre-determined correct result.[88]

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74. *See* Luca Bertuzzi, *EU Lawmakers Set to Settle on OECD Definition for Artificial Intelligence*, EURACTIV (Mar. 9, 2023) https://bit.ly/3mZr4Uf.

75. Chiu and Lim, *supra* note 5, at 353.

76. *Id.* at 353; Truby et al., *supra* note 27, at 111.

77. Chiu and Lim, *supra* note 5, at 353.

78. Bathaee, *supra* note 66, at 899.

79. John Armour & Horst Eidenmüller, *Self-Driving Corporations?* 10 (Eur. Corp. Governance Inst., Working Paper No. 475, 2019); Banwo, *supra* note 18, at 355. *See also* Bathaee, *supra* note 66, at 899.

80. Armour & Eidenmüller, *supra* note 79, at 10.

81. *Id.* at 10. *See* Tschider, *supra* note 71, at 691.

82. Banwo, *supra* note 18, at 356.

83. *Cf.* Śmietanka et al., *supra* note 7, at 7; Truby et al., *supra* note 27, at 111.

84. Armour & Eidenmüller, *supra* note 79, at 11. *See also* Hilb, *supra* note 66, at 856; W. N. Price II & Arti K. Rai, *Clearing Opacity Through Machine Learning*, 106 IOWA L. REV. at 775, 777 (2021).

85. Armour & Eidenmüller, *supra* note 79, at 12. *See also* Lui & Lamb, *supra* note 40, at 279.

86. Helfand, *supra* note 20, at 6; Śmietanka et al., *supra* note 7, at 7; Truby et al., *supra* note 27, at 111.

87. Armour & Eidenmüller, *supra* note 79, at 12.

88. *Id.*; Lui & Lamb, *supra* note 40, at 279.

In sum, only simple forms of AI are currently in use. Particularly, today's forms are rather limited, not "sciencefictionary"[89] or theoretical. They comprise at most less-supervised[90] but rather supervised learning systems.[91] Consequently, the scope of application is limited to frequent and generic fact patterns.[92] This does not mean, however, that these form are without any risk. Simple forms of fact pattern analysis can bear the risk of unjust discrimination and therefore be of regulatory concern. Consequently, a proper functioning of simpler forms of AI depends on the availability and quality of the data,[93] i.e., input data, training data, and feedback data.[94] The AI already in use needs careful regulation and assessment in light of insurance regulation.

III.   REGULATORY RISKS AND OPPORTUNITIES

Next, it is pivotal to examine both the regulatory and supervisory risks as well as the opportunities emerging from the use of AI for the insurance sector.[95] Given the complexity, breadth, and evolving character of this field, there is no universal answer.[96] The following subsections focus on prominently articulated risks and opportunities.

A. Risks

1. Systemic Risks

Systemic risks look at potential market or institutional failures in the course of failing markets or institutions leading to increased capital costs or diminished capital availability.[97] Consequently, it also assesses the influence of relationships of market players.[98]

Scholars have emphasized that the use of AI may create systemic risks for the insurance sector.[99] AI can intensify volatility, lead to flash crashes and uncertainty, pose severe risks when on rogue, or diminish market robustness due

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89.   *Cf.* Chris Lamberton et al., *Impact of Robotics, RPA and AI on the Insurance Industry: Challenges and Opportunities*, J. FIN. PERSP.: INS. 8, 11 (2017); Chiu & Lim, *supra* note 5, at 353.

90.   Swedloff, *supra* note 25, at 2035 n. 12.

91.   Albrecher et al., *supra* note 44, at 355; Armour and Eidenmüller, *supra* note 79, at 11.

92.   Armour & Eidenmüller, *supra* note 79, at 14.

93.   INT'L ASS'N OF INS. SUPERVISORS, *supra* note 20, at 11; Armbrüster, *supra* note 66, at 21; Roger A. Ford & W. N. Price II, *Privacy and Accountability in Black-Box Medicine*, 23 MICH. TELECOMM. & TECH. L. REV. 1, 3 (2016); Tschider, *supra* note 71, at 694.

94.   Hilb, *supra* note 66, at 857.

95.   Bernadino, *supra* note 16, at 4.

96.   *Cf.* Tschider, *supra* note 71, at 697.

97.   Steven L. Schwarcz, *Systemic Risk*, 97 GEO. L. J. 193, 204 (2008).

98.   Dirk A. Zetzsche et al., *Regulating a Revolution: From Regulatory Sandboxes to Smart Regulation* 7 (Eur. Banking Inst. Working Paper Series No. 11, 2017).

99.   Chiu & Lim, *supra* note 5, at 372; Śmietanka et al., *supra* note 7, at 14.

to uniformity.[100] Also, potential contagion risks have been stressed.[101] A lack of interpretability together with a wide-spread use may cause systemic risks.[102] Without an innovative and suitable framework, financial stability may be at risk since AI models are not able to predict and incorporate unknown unknowns.[103] Also, the European Systemic Risk Board (ESRB) identified cyber threats as major systemic risk.[104] In this same vein, the more AI is used overall, the more hostile agents will show up and compromise the system.[105] Scholars have further identified that AI is procyclical due to the focus on similar objectives and perceptions.[106] In that sense, AI will push to greater homogeneity and, therefore, decrease important countercyclical stabilization effects.[107] Others note that poor internal governance can become systemically problematic.[108] A different but important aspect is the factor of trust,[109] as scholars fear reputational damage of insurance companies due to AI-driven unfair treatment.[110] For example, in the course of AI managed trading decisions, unexpected performance leaps can cause loss in trust.[111] Both examples have a systemic dimension since trust is a key factor in the insurance business.[112] Without public communication[113] and precautionary measures, commentators fear that deficient AI can lead to a loss of trust in the insurance sector.[114] Moreover, there are concerns that, with respect to the values of good faith and equity, ML will disturb the well-established processes with the industry to safeguard these principles.[115] This is primarily because AI is not able to apply "breadth of contextual knowledge and understanding, emotions, feelings, values or common sense."[116] Further,

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100. *Id.* at 14 et seq.

101. Truby et al., *supra* note 27, at 114.

102. Jon Danielsson, *Artificial Intelligence and the Stability of Markets*, CTR FOR ECON. POL'Y RSCH.: VOX EU (Nov. 15, 2017), https://bit.ly/3k4SmnG.

103. Chiu & Lim, *supra* note 5, at 355 et seq.

104. *Recommendation of the European Systemic Risk Board of 2 December 2021 on a Pan-European Systemic Cyber Incident Coordination Framework for Relevant Authorities*, 2022 O.J. (C134) 1.

105. *Cf.* Danielsson, *supra* note 102.

106. *Id.*

107. *Id.*

108. Truby et al., *supra* note 27, at 112.

109. Lui & Lamb, *supra* note 40, at 280 et seq.; Price II & Rai, *supra* note 84, at 789.

110. *Cf.* Chiu & Lim, *supra* note 5, at 368 et seq.

111. *Id.* at 371.

112. Böffel, *supra* note 54, at 337, 349. *See* BAKER ET AL., *supra* note 9, at 14.

113. Russell T. Vought, *Memorandum for the Heads of Executive Departments and Agencies: Guidance for Regulation of Artificial Intelligence Applications* 9 WHITEHOUSE.GOV, https://bit.ly/3OzeCUE, (last visited Sept. 24, 2023).

114. Śmietanka et al., *supra* note 7, at 3. *Cf.* Chiu and Lim, *supra* note 5, at 377 (looking at the corporate context).

115. Helfand, *supra* note 20, at 12. *See also* EUR. INS. & OCCUPATIONAL PENSIONS AUTH., *supra* note 11, at 11.

116. *Id.* at 48.

significant capacity problems[117] on the side of the regulators can make it difficult to effectively and sufficiently supervise AI used by insurance companies.

Also, explainability and transparency of AI is relevant for assessing systemic risks.[118] Explainability means that a human must be able to understand the internal mechanics of the algorithm,[119] including model specific, model agnostic, and global and local sets.[120] Transparency means that affected stakeholders are aware that they interact with AI, understand the decisions, and overall accountability.[121] Systemic use of non-transparent and unexplainable AI, consequently, can cause hidden system risks.

However, scholars argue that it is questionable whether explainability and transparency can effectively counteract these risks.[122] This is because AI is generally discreet and opaque.[123] In particular, so-called black-box algorithms causes serious regulatory concerns. A black-box AI creates outcomes impossible to understand by humans, including the "how" and "why," because of too complex and non-transparent working schemes.[124] Rightfully, scholars emphasize that black-box AI is very problematic in a highly-regulated context.[125] It is able to undermine the rationales of insurance regulation[126] and, therefore, is generally unsuitable in insurance regulation.[127] Beyond that, black-box AI also carries a risk of creating a market for lemons. A lack of information about the functioning of AI can cause uninformed decisions by consumers which, in turn, increases the possibility that bad but cheaply priced insurance policies will push the prudentially priced ones out of the market.[128] Against this background, sound record keeping alone will not make black-box AI explainable and transparent just because there is "a digital trail."[129] Also, it is questionable how a stricter supervisory scrutiny could resolve these regulatory concerns. In particular, it

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117. *Cf*. Helfand, *supra* note 20, at 13.

118. *Cf*. Śmietanka et al., *supra* note 7, at 10. *See also* Armbrüster, *supra* note 66, at 29.

119. Śmietanka et al., *supra* note 7, at 11. *See also* Tschider, *supra* note 71, at 708.

120. Śmietanka et al., *supra* note 7, at 11.

121. *See* EUR. INS. & OCCUPATIONAL PENSIONS AUTH., *supra* note 11, at 41.

122. Bathaee, *supra* note 66, at 929.

123. Matthew U. Scherer, *Regulating Artificial Intelligence Systems: Risks, Challenges, Competencies, and Strategies*, 29 HARV. J. L. & TECH. (2016) 353, 356. *See also* Tschider, *supra* note 71, at 689. Regarding the latter, see Price II and Rai, *supra* note 84, at 784.

124. Bathaee, *supra* note 66, at 891, 893, 901 et seq.; H. M. Lyon, Cassandra L. Gaedt-Sheckter & Frances Waldmann, *United States: Artificial Intelligence, in* GLOBAL DATA REVIEW INSIGHT HANDBOOK 2021, 202; Yu and Alì, *supra* note 68, at 5.

125. Sarah-Louise Richter & Dörte Resch, *Leadership in the Age of Artificial Intelligence— Exploring Links and Implications in Internationally Operating Insurance Companies, in* NEW TRENDS IN BUSINESS INFORMATION SYSTEMS AND TECHNOLOGY: DIGITAL INNOVATION AND DIGITAL BUSINESS TRANSFORMATION 294, 315 (Rolf Dornberger ed., 2021); Niklas Bussmann et al., *Explainable Machine Learning in Credit Risk Management*, 57 COMPUTATIONAL ECON. 203 (2021).

126. *Cf*. Helfand, *supra* note 20, at 3.

127. *Cf*. Bussmann et al., *supra* note 125 ("not suitable in regulated financial services").

128. *Cf*. BAKER ET AL., INSURANCE LAW AND POLICY, *supra* note 9, at 13.

129. EUR. INS. & OCCUPATIONAL PENSIONS AUTH., *supra* note 11, at 41. *Cf*. Ford & Price II, *supra* note 93, at 4 (stating that a black box AI can be explainable with more information).

remains unclear how additional governance can bridge the explainability and transparency gap in the black-box AI context adequately.[130]

2. Non-Systemic Risks

Non-systemic risks, on the other hand, focus on individual institutions and aim to measure risks aligned with them and their business.[131]

To begin, cyber threats have been identified as a major risk for insurance companies using AI.[132] Notably, data breaches occur in financial institutions very often.[133] This has increased during the pandemic.[134] It seems that the financial sector increasingly gets into the crosshairs of cyber-attacks. Generally, it has been mentioned that greater use of AI leads to greater cyber risk[135] since this broadens areas of attack for cyber criminals.[136]

A similar but different risk arises from the reliance of the insurance sector on big data providers and brokers, e.g., in the area of cyber insurance.[137] There is evidence that the efficiency promises of big data in the context of pricing and risk predictions are exaggerated.[138] Big data analysis do not to be more accurate compared to traditional methods.[139] The reason for this mostly stems from insufficient and bad quality data[140] (i.e., there is a lack of accessible data for cyber insurers which prevents effective use of AI to some extent).[141] All of this is likely to lead to insufficient predictive results which can negatively affect an insurer's risk management.

Generally, insurance companies face compliance risks[142] when relying on commercial data vendors.[143] It is questionable how regulated entities will deal

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130. This approach is taken by EIOPA. EUR. INS. & OCCUPATIONAL PENSIONS AUTH., *supra* note 42, at 44.

131. Zetzsche et al., *supra* note 98, at 7.

132. *See* Armbrüster, *supra* note 66, at 21 et seq.; Chiu & Lim, *supra* note 5, at 357; Zekos, *supra* note 2, at 244. *Cf.* Ginger Z. Jin, *Artificial Intelligence and Consumer Privacy* 1, 4 (Nat'l Bureau of Econ. Rsch., Working Paper No. 24253, 2018).

133. *Id.* at 4.

134. Vaike Metzger et al., Trumpfkarte Standardisierung Cyber Security Und IT-Compliance Im Versicherungssektor Richtig Umsetzen VERSICHERUNGSWIRTSCHAFT (VW) 82 (2022).

135. *See Application Paper on the Use of Digital Technology in Inclusive Insurance*, INT'L ASS'N OF INS. SUPERVISORS 16 (Nov. 2018), https://bit.ly/3rKSBYW.

136. Michelle S. A. Lee et al., *Innovating with Confidence: Embedding AI Governance and Fairness in a Financial Services Risk Management Framework*, BERKELEY TECH. L. J.: COMMENTARIES 1,7 (Jan. 3, 2020) https://btlj.org/2020/01/innovating-with-confidence-embedding-ai-governance-and-fairness-in-a-financial-services-risk-management-framework/ (describing "technology risk" as a non-model risk domain).

137. *See* Talesh & Cunningham, *supra* note 1, at 995; *see also* Lee et al., *supra* note 136, at 7.

138. Talesh & Cunningham, *supra* note 1, at 976, 1005 et seq.

139. *Id.* at 1011.

140. *Id.* at 1005.

141. *Cf. id.* at 994.

142. Chiu & Lim, *supra* note 5, at 365 et seq.

143. *See* Helfand, *supra* note 20, at 20 et seq.; *cf.* INT'L ASS'N OF INS. SUPERVISORS, *supra* note 20, at 38, 39.

with proprietary mechanisms of non-regulated third-parties.[144] Also, the uncertainty of how legal compliance will be reported to the board of the insurance company bears regulatory risks.[145] Next, heavy reliance on third-party AI or data vendors may cause concentration risks.[146] Outsourced AI systems must suffice the same rigid robustness and performance requirements as in-house systems.[147] Comparatively, according to Art. 49 Solvency II Directive, outsourcing insurance companies remain ultimately responsible for the outsourced AI applications.[148] Likewise, third-party vendors should offer only the highest quality applications and provide sufficient information to allow insurers to assess the inner workings and proceedings of the AI.[149]

Beyond that, insurance companies face data compliance risks.[150] Among others, boards will have to answer the question how to structure data management and to assess its quality.[151] Regarding data privacy and protection[152] an insurance company has to safeguard the overall quality and reliability of the used data.[153] Incomplete or inaccurate data may lead to incorrect results and effects such as higher premiums.[154] This, in turn, may be considered unfair or discriminatory.[155] An insurance company using AI must also maintain appropriate data mapping, updated privacy policies and procedures, and private data privacy violation enforcement.[156]

Both the design and application of AI alternatively and cumulatively heavily carry the risk of violating anti-discrimination and inclusion law.[157] In the U.S., this also depends on state law.[158] Notwithstanding, insurance companies bear significant micro prudential risks in this regard. Technically, unjust

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144. COHEN, *supra* note 3.

145. Zekos, *supra* note 2, at 249.

146. EUR. INS. & OCCUPATIONAL PENSIONS AUTH., *supra* note 11, at 65.

147. *Id*. at 65.

148. EU-US Insurance Dialogue Project, *supra* note 38, at 2.

149. EUR. INS. & OCCUPATIONAL PENSIONS AUTH., *supra* note 11. *See also* Armbrüster, *supra* note 66, at 21.

150. Chiu & Lim, *supra* note 5, at 365 et seq.

151. *See* Śmietanka et al., *supra* note 7, at 3.

152. Chiu & Lim, *supra* note 5, at 367; Talesh & Cunningham, *supra* note 1, at 986. *See also* Lyon et al., *supra* note 124.

153. Talesh & Cunningham, *supra* note 1, at 986.

154. *Id*. at 1010.

155. Swedloff, *supra* note 25, at 2064 et seq.; *see* Bednarz and Manwaring, *supra* note 13, at 9 et seq.

156. Sherry-Maria Safchuk & Garylene Javier, *Differences Between the California Consumer Privacy Act and the California Privacy Rights Act*, 74 CONF. ON CONSUMER FIN. L. Q. REP. 400, 410 (2021).

157. *Cf*. Anya E. R. Prince & Daniel Schwarcz, *Proxy Discrimination in the Age of Artificial Intelligence and Big Data*, 105 IOWA L. REV. 1257 (2020); Truby et al., *supra* note 27, at 115; Zekos, *supra* note 2, at 257.

158. BAKER ET AL., *supra* note 9, at 270. *See also* UNFAIR TRADE PRACTICES ACT § 4(G)(5) (NAT'L ASS'N OF INS. COMM'RS MODEL LAWS, REGULATIONS, GUIDELINES, AND OTHER RESOURCES 2021).

discrimination may happen in three stages: input, training and programming[159] and through direct, indirect and opaque proxy discrimination.[160] Especially the latter has gained momentum recently. Scholars highlight that AI will inevitably lead to indirect proxy discrimination.[161] This is able to undermine the goal of promoting social risk sharing regarding health insurance.[162] In that sense, predictive analysis focuses on and crystalizes an individual rather than a pool of people.[163] The more detailed the data set is, the more AI can undermine basic ideas of fairness and equality in insurance pooling and transferring risks.[164] This can lead to underinsurance due to higher prices for certain individuals.[165] Consequently, AI may "cloak the reproduction of […] historical hierarchies in seemingly neutral and objective structures"[166] with a dangerous feedback loop on a broader scale. Nonetheless, actuarially fair risk classification may be discriminatory but not unlawful.[167]

Another micro prudential risk can be identified in AI driven price or rate optimization. This practice alone raises concerns that it subverts fairness standards and laws.[168] In that regard, the affordability of insurance[169] as a general goal of insurance regulation may be partially at stake. Price optimization may lead to higher premiums for high-risk insureds which, consequently, can make it financially impossible for these people to obtain coverage.[170] The California Department of Insurance (CDI) identifies price optimization as a violation of anti-discrimination laws.[171] Likewise, EIOPA stresses that this practice should be avoided when used to improve a consumer's will to pay or to accept certain policies.[172] However, it also has to be noted that price optimization through even more personalized rates and micro-segmentation enhances the profitability of an insurance company.[173] It can also create benefits for low-risk insureds.[174] Further,

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159. Lui & Lamb, *supra* note 40, at 278.

160. Prince & Schwarcz, *supra* note 157, at 1268; Śmietanka et al., *supra* note 7, at 13. *Cf.* Zekos, *supra* note 2, at 241.

161. *See* Helfand, *supra* note 20, at 21.

162. Prince & Schwarcz, *supra* note 157, at 1291 et seq.

163. Talesh & Cunningham, *supra* note 1, at 982; Eur. Ins. & Occupational Pensions Auth., *supra* note 42, at 8; Eur. Ins. & Occupational Pensions Auth., *supra* note 11, at 11.

164. *Id*. at 13; Bednarz & Manwaring, *supra* note 13, at 2.

165. Lewis, *supra* note 23, at 496; Talesh & Cunningham, *supra* note 1, at 987. *See also* Albrecher et al., *supra* note 44, at 358.

166. Prince & Schwarcz, *supra* note 157, at 1296 et seq. *See also* Int'l Ass'n of Ins. Supervisors, *supra* note 20, at 11.

167. Baker et al., Insurance Law and Policy, *supra* note 9, at 258.

168. *Cf*. Helfand, *supra* note 20, at 10 n. 71.

169. Lewis, *supra* note 23, at 496.

170. *Cf.* Eur. Ins. & Occupational Pensions Auth., *supra* note 11, at 11.

171. State of California, Department of Insurance, *Notice Regarding Unfair Discrimination in Rating: Price Optimization* (Feb. 7, 2015).

172. Eur. Ins. & Occupational Pensions Auth., *supra* note 11, at 7.

173. *Id*. at 10.

174. *Id*.

it can increase the overall insurability for high-risk insureds who were not able to obtain insurance protection in a broader risk pool.[175] From a business and competition point of view, price optimization allows insurance companies to bind low-risk insureds.[176] It also provides a strong competitive tool.[177] After all, there should be a balanced approach. In essence, price optimization should not be applied regarding essential lines with sensible social implications.[178]

This transitions to the overarching topic of board responsibility[179] and liability risks.[180] Scholars emphasize that AI will play a significant role at the level of the board of directors.[181] Moreover, in the financial industry, AI will be or is already widely used to underpin management decisions.[182] Harm of any kind caused by deficient or rogue AI is likely to fall back to the board. Also, non-compliance with regulatory provisions or other laws such as anti-discrimination statues may lead to fines and penalties.[183] Consequently, this will pose considerable accountability and liability risks for the board. In that context, scholars have also raised the risk of overreliance of board members on AI because of its opaqueness. This can lead to a lack of accountability where board members discharge their duties and avoid liability due to the reliance on opaque AI decisions.[184] Also Further, a decrease of skill and expertise is feared.[185] A kind of "behavioural 'auto-pilot[ing]'"[186] is worrisome from a micro prudential regulatory perspective. Lastly, insurance companies themselves can be held accountable in the course of AI malfunctions. In that sense, the concept of corporate liability comes into play.[187] If this concept is applied, it may confront the institution with significant liability risks. AI works best under the law of big numbers which is why potential deficiencies are likely to affect a vast number of insureds and, therefore, lead to a lot of potential claimants.

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175. *Id*.

176. *Id*. at 37.

177. *Id*.

178. *See also id*. at 35.

179. Chiu & Lim, *supra* note 5, at 380 et seq.

180. Truby et al., *supra* note 27, at 115; Chiu & Lim, *supra* note 5, at 355, 360; Andrea Bertolini, *Insurance and Risk Management for Robotic Devices: Identifying the Problems*, 16 GLOB. JURIST 291, 297 (2020).

181. Florian Möslein, *Robots in the Boardroom: Artificial Intelligence and Corporate Law*, *in* RESEARCH HANDBOOK ON THE LAW OF ARTIFICIAL INTELLIGENCE 649 (2018).

182. *Id*.

183. Chiu & Lim, *supra* note 5, at 371; Śmietanka et al., *supra* note 7, at 15; Zekos, *supra* note 2, at 263.

184. Zekos, *supra* note 2, at 250 et seq.

185. *Id*. at 251.

186. Chiu & Lim, *supra* note 5, at 367.

187. Diamantis, *supra* note 4, at 812.

B. Opportunities

The opportunities AI holds for the insurance sector covers various different fields and entail remarkable benefits.[188] Most notably, AI is believed to bring agency cost reduction due to the use of robo-advisors.[189] The same is true regarding better risk assessment.[190] AI can be a primary driver for economic growth (*see* introduction) as well as making the world-wide economies greener.[191] Scholars believe that AI will allow improved strategic risk management in the course of aligned "control mechanisms and reporting features."[192] Indeed, improved risk classifications can decrease moral hazard and adverse selection problems and therefore increase not only the competitiveness of an insurance company, but also its overall efficiency.[193] The other side of the coin, however, is that increasingly individualized risk management can incentivize an insurance company to desist from insuring an individual after the company learned a heightened likelihood of issued claims.[194]

Also, in terms of underwriting risks, room for improvement from InsurTech solutions has been identified. For example, time underwriting and risk assessment through a forward-looking approach in using data from the (dark) web may optimize traditional approaches.[195] This is because AI allows companies to gather and evaluate much more data much faster and, hence, offer more accurate insurance premiums. Generally speaking, big data analytics is believed to increase claim settling.[196]

Moreover, AI may enable better service for customers[197] and function as a product enabler.[198] This is because of microinsurance,[199] personalized product offerings,[200] and marketing improvements.[201] AI may have positive effects on the

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188. EUR. INS. & OCCUPATIONAL PENSIONS AUTH., *supra* note 11, at 6; Bednarz & Manwaring, *supra* note 13, at 7.

189. INT'L ASS'N OF INS. SUPERVISORS, *supra* note 21, at 4; Swedloff, *supra* note 25, at 2072.

190. Śmietanka et al., *supra* note 7, at 2; Zekos, *supra* note 2, at 248.

191. EUR. INS. & OCCUPATIONAL PENSIONS AUTH., *supra* note 42, at 6; Douglas W. Arner et al., *Sustainability, FinTech and Financial Inclusion*, 21 EUR. BUS. & ORG. L. REV. 7, 8 (2020); Eugenia Macchiavello & Michele Siri, *Sustainable Finance and Fintech: Can Technology Contribute to Achieving Environmental Goals? A Preliminary Assessment of 'Green FinTech'* 18 (Eur. Banking Inst., Working Paper No. 71, 2020); Lukas Böffel & Jonas Schürger, *Sustainability: A Current Driver in EU Banking and Insurance Regulation*, *in* DIGITALISATION, SUSTAINABILITY, AND THE BANKING AND CAPITAL MARKETS UNION 229, 262 (2022).

192. Zekos, *supra* note 2, at 249.

193. BAKER ET AL., INSURANCE LAW AND POLICY, *supra* note 9, at 257.

194. INT'L ASS'N OF INS. SUPERVISORS, *supra* note 20, at 23.

195. *See* Talesh & Cunningham, *supra* note 1, at 1022.

196. EU-US Insurance Dialogue Project, *supra* note 38, at 3.

197. INT'L ASS'N OF INS. SUPERVISORS, *supra* note 21, at 4. *Cf.* Helfand, *supra* note 20, at 3; Jin, *supra* note 132, at 8.

198. COHEN, *supra* note 3; Lewis, *supra* note 23, at 497.

199. Lewis, *supra* note 23, at 500.

200. EU-US Insurance Dialogue Project, *supra* note 38, at 3; Śmietanka et al., *supra* note 7, at 2; Talesh & Cunningham, *supra* note 1, at 984.

201. INT'L ASS'N OF INS. SUPERVISORS, *supra* note 21, at 4.

overall insurability[202] and can address heightened customer expectations appropriately.[203] Ultimately, it can improve financial inclusion.[204] This, however, does not apply to individuals not having access to smart devices or the internet or do not share their data.[205] It seems realistic to assume that particularly a considerable number of not yet insured people have lesser access to smart devices or the internet. This foundationally questions the positive effects of AI on financial inclusion.

Yet, another opportunity lies in behavioral pricing through telematics[206] and fraud detection.[207] Behavioral pricing may increase the risk awareness of insureds and improve the overall risk mitigation. This inevitably will heighten societal benefits.[208] Also, anti-money laundering enforcement can benefit from technology-driven risk control mechanisms.[209] So far, immense sums of fraudulent insurance claims[210] burden the sector, which lead to higher claims and consequently confront insureds with higher premiums. Improving claims fraud detection, thus, can diminish these costs[211] and lead to a more accurate and lower premium calculation.[212]

Further, AI may be put in place to maintain and guard data privacy as a tool to effectively detect data breaches or hacking.[213] Also, regarding discrimination concerns, AI may help by revealing already existing discriminatory patterns.[214] Optimized claims investigation measures could be set in place by applying AI-driven data analysis[215] and in that way benefit insureds. From a technical regulatory point of view, AI bears the opportunity of more efficient, cheaper, and greater compliance.[216] Likewise, risk management and micro prudential supervision are supposed to be ideal use cases for AI applications, primarily for enforcing regulatory rules with great data sets.[217] The discussion about

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202. Hall, *supra* note 16, at 2. *Cf.* BAKER ET AL., INSURANCE LAW AND POLICY, *supra* note 9, at 258 (stating that innovative insurers can re-attract low-risk insureds who have chosen not to buy insurance).

203. Zekos, *supra* note 2, at 253; *cf.* Talesh and Cunningham, *supra* note 1, at 978.

204. EUR. INS. & OCCUPATIONAL PENSIONS AUTH., *supra* note 42, at 8.

205. INT'L ASS'N OF INS. SUPERVISORS, *supra* note 20, at 23.

206. BAKER ET AL., INSURANCE LAW AND POLICY, *supra* note 9, at 8.

207. Śmietanka et al., *supra* note 7, at 2. *See* EU-US Insurance Dialogue Project, *supra* note 38, at 3; Truby et al., *supra* note 27, at 111; Armbrüster, *supra* note 66, at 26.

208. INT'L ASS'N OF INS. SUPERVISORS, *supra* note 20, at 26.

209. INT'L ASS'N OF INS. SUPERVISORS, *supra* note 136, at 32.

210. *See* Sushant K. and Chivukula, *supra* note 12.

211. Truby et al., *supra* note 27, at 113.

212. INT'L ASS'N OF INS. SUPERVISORS, *supra* note 20, at 29.

213. Jin, *supra* note 133, at 13; *cf.* Truby et al., *supra* note 27, at 111.

214. Zekos, *supra* note 2, at 245.

215. *Cf.* Helfand, *supra* note 20, at 23.

216. Lukas Böffel, *The Call for AI Championing Regulatory Compliance*, BERKELEY CTR. L. & BUS: THE NETWORK (Nov. 3 2021), https://bit.ly/3vwboIA; Truby et al., *supra* note 27, at 111; INT'L ASS'N OF INS. SUPERVISORS, *supra* note 21, at 26.

217. Danielsson, *supra* note 102. *Cf.* Bussmann et al., *supra* note 125.

"automated regulatory compliance"[218] shows that both industry and authorities have high hopes in easing the increasingly dense regulations on the one hand and following regulatory goals and objectives on the other hand.

IV. THE ASSOCIATIONS AND AGENCIES APPROACH

Important players of insurance regulation are its associations and regulatory agencies. They often shape the day-to-day insurance business with their guidelines, opinions, and bulletins. Against this backdrop, it is vital to look at the approach of the NAIC on the use of AI in the insurance sector (sub A).

Notably, the EU-U.S. insurance project was established in 2012 with the goal to increase mutual understanding and enhance cooperation.[219] This is why a comparative point of view is feasible and, comparatively, EIOPA's position has to be considered (sub B). "[EIOPA] is a European Union financial regulatory institution. [Its] mission is to protect the public interest by contributing to the short, medium and long-term stability and effectiveness of the financial system for the Union economy, its citizens and businesses."[220]

Additionally, the importance of a coordinated international approach cannot be overstated. In that sense, the position of the IAIS (sub C) has to be included, too. "[IAIS] is the global standard-setting body responsible for developing and assisting in the implementation of principles, standards and guidance as well as supporting material for the supervision of the insurance sector. Established in 1994, [they] are a voluntary membership organisation of insurance supervisors from more than 200 jurisdictions … The IAIS … provides a forum for members to share their experiences and understanding of insurance supervision and insurance markets."[221]

A. NAIC

The NAIC has been quite active in the last years when it comes to technological changes, big data, innovation, and AI. For example, the Innovation and Technology (EX) Task Force was created. This task force has multiple goals. Chief among these goals is to provide "forums, resources and materials for the discussion of innovation and technology developments in the insurance sector."[222] Further, the NAIC installed the Big Data and Artificial Intelligence (EX) Working Group. The group is designed to "[r]esearch the use of big data

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218. Banwo, *supra* note 18.

219. *See* EU-U.S. Insurance Project, U.S. DEPT. OF TREASURY, https://home.treasury.gov/policy-issues/financial-markets-financial-institutions-and-fiscal-service/federal-insurance-office/eu-us-insurance-project (last visited Feb. 1, 2022).

220. EUR. INS. & OCCUPATIONAL PENSIONS AUTH., *supra* note 42.

221. INT'L ASS'N OF INS. SUPERVISORS, *supra* note 20.

222. *See Artificial Intelligence (EX) Working Group*, NAT'L ASS'N OF INS. COMM'RS, https://content.naic.org/cmte_ex_ai_wg.htm (last visited Sept. 24, 2023).

and artificial intelligence (AI) in the business of insurance and evaluate existing regulatory frameworks for overseeing and monitoring their use…, which may include model governance … for the insurance industry."[223] Additionally, the Innovation, Cybersecurity, and Technology (H) Committee[224] and Big Data and Artificial Intelligence (H) Working Group[225] should be mentioned. Notably, the Big Data and Artificial Intelligence (H) Working Group published in March 2021 that it was working on the components of a model governance framework.[226] In 2022, the NAIC installed the Innovation in Technology and Regulation (H) Working Group which intends to work on "forums, resources, and materials for discussing innovation and technology … including new products, services, business models, and distribution mechanisms."[227] Also, it intends to set up "a forum that provides insurers or third parties working with insurers the opportunity to confidentially brief state insurance regulators regarding innovation and technology applications, tests, use cases, and results." [228]

Notably, the NAIC published in 2020 its high-level Principles on Artificial Intelligence (AI).[229] This guiding and non-binding set of principles is designed to maintain accountability, compliance, and transparency regarding AI. In that sense, safe, secure, fair and robust outputs should promote innovation while protecting consumers.[230]

Overall, the set of principles follows the *FACTS* approach: *F*air and ethical, *a*ccountability, *c*ompliance, *t*ransparency, and *s*ecure safe and robust. Fair and ethical AI includes legal compliance with respect to unfair discrimination, access to insurance, underwriting, privacy or ratemaking.[231] Accountability entails that AI actors shall be held responsible and accountable for the aforementioned compliance in light of their roles and positions, i.e., the creation, implementation and (unintended) impacts of the system. The used data should be stored for reporting and disclosure purposes. Also, accountability includes human monitoring and the possibility to intervene.[232] Compliance comprises that AI actors should have sufficient knowledge and resources to comply with the law

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223. *See id*.

224. *See Innovation Cybersecurity and Technology (H) Committee*, https://bit.ly/38fX1QF (accessed Sept. 7, 2023).

225. *See Innovation Cybersecurity and Technology (H) Committee*, Nat'l Ass'n of Ins. Comm'rs, https://bit.ly/3xJBLOd (last visited Sept. 7, 2023).

226. *See Components of a Model Governance Framework, Virtual Meeting of the Big Data and Artificial Intelligence (EX) Working Group*, Nat'l Ass'n of Ins. Comm'rs, https://bit.ly/3OxkugV (last visited Sept. 7, 2023).

227. Nat'l Ass'n of Ins. Comm'rs, *supra* note 225.

228. *Id*.

229. *Principles on Artificial Intelligence (AI)*, Nat'l Ass'n of Ins. Comm'rs (Aug. 14, 2020), https://bit.ly/3LgQ2pC.

230. *Id*. at 1.

231. *Id*.

232. *Id*. at 2.

and to avoid (un-)intentional violations.[233] Transparency aims to improve the overall trust in AI requiring transparent use and disclosures to stakeholders. At the same time, confidential and proprietary information regarding an AI system must be protected. Consequently, the NAIC highlights the disclosure of the used data, the purpose of this data, and its consequences for stakeholders. Stakeholders should have the option to review, inquire, and actually understand AI-based decisions.[234] Moreover, the AI has to be secure, safe, and robust. This should maintain compliance with the law under reasonably foreseeable use which requires to be able to trace the used data, processes and decisions of the system. Lastly, AI actors should include the system in an appropriate risk management.[235]

B. EIOPA

EIOPA has not been less active.[236] On a high level, EIOPA published its Digital Transformation Strategy, where it addresses how the authority can best contribute to a sound transformation. This affects, e.g., the insurance market and its supervision.[237] The authority's general approach is to be technologically neutral and to create a level playing field.[238] Beyond that, the authority focuses on InsurTech looking at best practices of licensing requirements, peer-to-peer insurance, and proportionality.[239] For example, EIOPA outlined that the existing regulatory framework should be applied technologically neutral and without specific segmental treatment, in particular, in a proportionate manner.[240] EIOPA's focus lies on finding a balance between innovation and consumer protection the same as financial stability.[241]

Importantly, an expert group of EIOPA published six AI Governance Principles.[242] First, proportionality essentially requires insurance companies to provide an AI impact assessment. This should lead to insurers applying proportionate governance measures. Proportionality depends on the impact of the actual use case. Also, ethical and trustworthy AI should be enforced by combining these governance measures.[243]

Second, fairness and non-discrimination address the potential outcomes of AI and weigh the interests of affected stakeholders. Financial inclusion has been

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233. *Id.*
234. *Id.*
235. *Id.* at 3.
236. EUR. INS. & OCCUPATIONAL PENSIONS AUTH., *supra* note 42, at 15.
237. *Id.* at 2.
238. *Id.*
239. EUR. INS. & OCCUPATIONAL PENSIONS AUTH., *supra* note 21.
240. *Id.* at 19.
241. *Id.* at 34.
242. EUR. INS. & OCCUPATIONAL PENSIONS AUTH., *supra* note 11.
243. *Id.* at 8.

identified as an important aspect of an insurer's corporate social responsibility. In this vein, credit scores or certain types of price optimization should not be used. Moreover, data should be used fairly, which includes a fit for purpose determination of the data set. The AI and the underlying data should be subject to bias monitoring and mitigation. More explainable AI could achieve this.[244]

Third, transparency and explainability urge insurance companies to use explainable AI, in particular regarding high-impact AI use cases. That should be the case even where this negatively affects model performance.[245] Where this is not possible, explainability may well be combined with other governance measures. This way, the accountability of insurance companies should be ensured, e.g., through redress mechanisms. There should also be transparent communication in case of AI use when a consumer interacts with it.[246]

Fourth, the authority points out that human oversight should be in place. This includes, among other things, assigning and documenting roles and responsibilities within the companies' governance framework. Employees should be assessed and trained accordingly.[247]

Fifth, data governance and record keeping include fundamental data privacy rules as a foundation of a sound data governance system. In that context, data fed into the AI should be accurate, complete and appropriate. Importantly, EIOPA notes that the used data must be kept safely and securely. In high-impact use cases, records of data management processes and modeling methodologies are required, primarily to allow traceability and auditability.[248]

Sixth and last, the principles mention robustness and performance. AI should be robust regardless of its origin, may it be internal or external. This includes its use cases and the harm it may cause. Also, the system has to be fit for purpose including the assessment and monitoring of its performance. Accordingly, AI should be calibrated and validated in a sound manner and should produce reproducible results stably and steadily.[249]

C. IAIS

Internationally, the IAIS has published papers on digitalization,[250] digital technology,[251] and big data.[252] As of now, there are no specific principles on AI published. However, IAIS links the impact of digitalization to the conduct of

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244. *Id*. at 8.
245. EUR. INS. & OCCUPATIONAL PENSIONS AUTH., *supra* note 42, at 43.
246. EUR. INS. & OCCUPATIONAL PENSIONS AUTH., *supra* note 11.
247. *Id*.
248. *Id*.
249. *Id*.
250. INT'L ASS'N OF INS. SUPERVISORS, *supra* note 21.
251. INT'L ASS'N OF INS. SUPERVISORS, *supra* note 136.
252. INT'L ASS'N OF INS. SUPERVISORS *supra* note 20.

insurance business in light of its Insurance Core Principle (ICP) 19.[253] Against this background, IAIS identifies multiple opportunities coming along with the digitized insurance business, namely improved marketing, greater insurability or efficiency benefits. At the same time, exclusion may occur when applying modern technology.[254] Beyond that, the IAIS covers supervisory concerns such as the need to balance innovation and conduct concerns,[255] new and advanced supervisory skills and tools,[256] supervision of new and different entities (namely BigTech firms),[257] jurisdictional and definitional regulatory arbitrage,[258] and information security.[259]

More specifically, the IAIS focuses on the use of digital technology in inclusive insurance.[260] Big data and data analytics are identified as tools to increase and optimize product offerings, pricing, or claims prediction.[261] IAIS identifies that digital technology may bring benefits such as bridging the lack of information on the consumer side, addressing specific consumer needs, or offering affordable premiums.[262] However, this challenges the existing frameworks which are not designed for machines carrying out certain functions or roles.[263] Another downside may be financial exclusion when certain groups carry too much risk.[264] To avoid this, a broader form of disclosure may help as a mitigation tool,[265] because exclusion can be better identified and minimized. Further, the corporate governance of insurance companies using technology plays an important role. Generally speaking, the system of governance should be fit for purpose in light of technological applications including sufficient knowledge on management level.[266] Notwithstanding these risks, a balanced approach of allowing innovation while not harming customers should be applied. This may include a more advanced supervision of intermediaries and third parties.[267]

Further, in 2020, IAIS published an issues paper specifying the use of data by insurers in the realm of digitalization, in particular regarding the use of algorithms in connection with ICPs 18 and 19.[268] The paper mentioned that

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253. INT'L ASS'N OF INS. SUPERVISORS, *supra* note 21, at 4.
254. *Id*. at 8.
255. *Id*. at 26.
256. *Id*. at 27 et seq.
257. *Id*. at 30.
258. *Id*. at 31.
259. *Id*. at 31 et seq.
260. INT'L ASS'N OF INS. SUPERVISORS, *supra* note 136, at 5, 6.
261. *Id*. at 10.
262. *Id*. at 11.
263. *Id*. at 16.
264. *Id*. at 17.
265. *Id*.
266. *Id*. at 27.
267. *Id*. at 30.
268. INT'L ASS'N OF INS. SUPERVISORS, *supra* note 20, at 4.

increasingly granular data leads to better and more precise insurance products. Also, this form of data comes with the added benefit of insurability and offers significant benefits to customers and the insurance sector.[269] However, complex and opaque algorithms may lead to adverse effects which can require adjusted third party risk management and governance systems.[270] In that sense, appropriate transparency and insurers' accountability are important factors to address in a supervisory context,[271] as they can they to reduced opaqueness and greater traceability. Further, IAIS points out that big data analytics allows greater individualized insurance offerings. This, at the same time, can have positive and negative effects on the overall insurability.[272] The design decisions of the big data analysis model should be transparent and explainable, while bearing proprietary interests in mind.[273] Overreliance on (potentially false) generic models should be avoided. This could diminish consumer trust.[274] IAIS emphasizes that the different aspects of innovation, the protection of proprietary rights, and fair and ethical use of consumer data must be aligned with each other.[275] This entails various factors, such as the sustainability, affordability, and availability of insurance coverage.[276] Also, governance principles and supervisory oversight of algorithms,[277] third party risk management[278] and privacy, data protection, and ownership[279] are mentioned.

V.   EXEMPLIFICATION

The legal assessment of AI depends on the actual use case and the factual circumstances. Importantly, the practical technicalities must be considered. Fragmented and unharmonized[280] insurance regulation in the U.S. makes it impossible to make universally applicable statements. Instead, regulations must be analyzed on a state-by-state basis. This paper cannot and should not focus on every state regulation. Therefore, in the following, a prominent use case in California will be used as an example of how AI is applied in practice.

The use case discussed below is the cooperation of Farmers Insurance with Zesty.ai. It was selected for multiple reasons. First, Zesty.ai essentially uses AI for its business model and operates as an AI third party vendor. Second, it is the

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269. *Id*. at 14 et seq.
270. *Id*. at 4.
271. *Id*.
272. *Id*. at 7, 17, 19.
273. *Id*. at 16, 22, 27.
274. *Id*. at 27.
275. *Id*. at 32.
276. *Id*.
277. *Id*. at 34.
278. *Id*. at 38.
279. *Id*.
280. Talesh & Cunningham, *supra* note 1, at 989.

first case in which the CDI approved the use of AI for risk pricing and rate making. Third, Zesty.ai is active throughout the U.S., and its *modus operandi* may allow drawbacks beyond the state of California explicitly. Fourth, the company aims to mitigate climate risks using AI that combines two of the currently most pressing issues in financial regulation.

After a brief factual and regulatory overview (0), an in-depth analysis of one major implication follows (0). This is the tension between innovation and consumer protection (0/0).

A. *Farmers Insurance and Zesty.ai*

1. *Facts and Background*

Farmers Insurance Group (Farmer Insurance) is headquartered in California and an insurance group with various insurance subsidiaries. It operates in California and several other states offering a range of insurance lines.

In 2021, Farmers Insurance partnered with Zesty.ai in California and integrated the latter's wildfire scoring model called Z-FIRE in its homeowners underwriting processes.[281] Keith Daly, president of personal lines for Farmers Insurance, said that the insurer will use Zesty.ai's technology to supplement already existing structures and procedures.[282]

Zesty.ai itself is an InsurTech start-up which was founded in 2015 and is based in the Bay Area. The company has developed four risk scoring models: Z-FIRE, Z-HAIL, Z-FLOOD, and Z-PROPERTY.[283] Zesty.ai claims that its models are powered by AI, driven by climate science, rooted in property-specific loss data, underpinned by 130Bn+ data points, and built on 65+ property-level risk modifiers.[284] All this, accordingly, leads to an improved risk selection, that the premiums commensurate with risk, a decreased loss ratio, an effective risk management concentration, better reinsurance pricing, and increased reinsurance capacity.[285]

In 2021, the CDI approved the use of the Z-FIRE model as an AI driven risk pricing and rate making regarding fire insurance for the first time.[286] "The Z-FIRE™ risk scoring model is a proprietary predictive risk evaluation platform that leverages high-resolution imagery, building and weather data, and artificial intelligence to identify property attributes that may impact the level of a property's wildfire risk."[287] It does not rely on statistical regression analysis but

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281. *News Releases*, FARMERS INS., https://bit.ly/3rLMXpE (last visited Sept. 7, 2023).
282. *The Latest News & Press*, ZESTY.AI, https://bit.ly/3vw2dYQ (last visited Sept. 7, 2023).
283. *Z-Property*, ZESTY.AI, https://bit.ly/37F4okL (last visited Sept. 7, 2023).
284. ZESTY.AI, https://bit.ly/3EGBbC9 (last visited Sept. 7, 2023).
285. *Id*.
286. CAL. DEPT. OF INS., https://bit.ly/3xHQwRA (last visited Sept. 7, 2023).
287. *Farmers Insurance Adopts Innovative Technology by Zesty.AI*, ZESTY.AI, https://rb.gy/hrt56 (last visited Sept. 7, 2023).

uses AI driven cutting-edge predictive models.[288] It is trained with historical data and considers, among others, the geolocation of a house and the material of the roof.[289]

2. Fundamentals of P&C Risk Pricing and Rate Making in California

The Farmers Insurance and Zesty.ai cooperation raises compliance questions regarding risk pricing and rate making. In this section, accordingly, an assessment of the respective California insurance regulatory law follows to the extent appropriate.

As mentioned above, Farmers Insurance applied for a rate filing in the context of P&C insurance (particularly fire insurance) according to California Insurance Code (CIC) §§ 100 para 1, 102. Rate making is governed under Chapter 9, in particular Article 7, namely CIC §§ 1850.4 et seqq. Specifically, CIC §§ 1861.01 et seqq. reflects the changes of Proposition 103[290] which came into effect in 1988.[291] Under current California law and in light of Proposition 103, insurance rates are subject to assessment "prior approval,"[292] which means that insurers have to file rates with the Commissioner before actually using them.[293] It also encloses a strong consumer participation in basically any stage of the rate making proceedings.[294]

As a general rule, CIC § 1861.05 para. a states that rates must not be excessive, inadequate, or unfairly discriminatory. According to CCR § 2642.1, excessive rates are rates that are expected to yield the reasonably efficient insurer a profit that exceeds a fair return on the investment used to provide the insurance. CCR § 2642.3 clarifies that inadequate rates are rates under which a reasonably efficient insurer is not expected to have the opportunity to earn a fair return on the investment that is used to provide the insurance. Whether rates are excessive or inadequate follows the maximum/minimum permitted earned premium formula.[295] This formula, generally speaking, follows the objective whether an insurance company is able to recover from losses and costs due to paying claims and costs aligned with it, and whether the equity return rate is reasonable and

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288. *Z-Fire*, ZESTY.AI, https://bit.ly/3v89qzq (last visited Sept.7, 2023).

289. *California Department of Insurance Approves Filings Using ZestyAI Z-FIRE Model for Both Underwriting and Rating*, ZESTY.AI (2021), https://bit.ly/3KdKjPH (last visited Sept.7, 2023).

290. *See* Stephen D. Sugarman, *California's Insurance Regulation Revolution: The First Two Years of Proposition 103*, 27 SAN DIEGO L. REV. 638 (1990).

291. SPENCER Y. KOOK & ANGELA HAN, 1 CALIFORNIA INSURANCE LAW & PRACTICE § 1.07 (2022).

292. JOHN K. DIMUGNO & PAUL E.B. GLAD, CALIFORNIA INSURANCE LAW HANDBOOK: A REFERENCE AND GUIDE § 66:5 (2021).

293. KOOK & HAN, *supra* note 292; RICHARD G. DE LA MORA & SPENCER Y. KOOK, 1 CALIFORNIA INSURANCE LAW & PRACTICE § 6A.04 (2022).

294. RICHARD G. DE LA MORA & SPENCER Y. KOOK, 1 CALIFORNIA INSURANCE LAW & PRACTICE § 6A.07 (2022).

295. DE LA MORA & KOOK, *supra* note 293.

useful in providing that insurance.[296] Notably, the data for this calculation has to be forward looking (i.e., projected). The aimed for projections to build upon historical data, considering loss developments or loss trends expected during the time in which the rates are charged.[297] "Rates are deemed 'inadequate' if they fall below the minimum permitted earned premium as determined by the formula and deemed 'excessive' if they exceed the maximum permitted earned premium."

Further, CIC § 679.71 requires that no admitted insurer applies insurance terms and conditions differently to comparable cases, except for reasons applicable similarly to persons of every characteristic pursuant to Civil Code Sec. 51 lit. b or e. The CDI assesses unfairly discriminatory behavior on a case-by-case basis.[298] At the same time and in practice, the CDI follows the definition of CIC § 11732.5,[299] stating that rates are unfairly discriminatory if price differentials fail to reflect equitably the difference in expected losses and expenses. However, a rate of an insurer shall not be deemed unfairly discriminatory as long as different rates of similar insureds reflect the differences with reasonable accuracy. From this follows that discrimination must be fair, i.e., actuarially justified.[300] The CDI in particular assesses whether a rate filing "adequately reflects the differences in loss expectancies the policyholders display."[301] Overall, rate making requires the insurance company to file the rules and factors which are relevant to calculate the individual premium in light of the individual risk characteristics.[302]

Pursuant to CIC § 1858, any person affected by a rate charged, rating plan, rating system, or underwriting rule followed or adopted by an insurer, can file a written complaint with the Commissioner to request review. Also, this person may file a written request for a public hearing before the Commissioner. After the Commissioner determines whether a rate is excessive, it shall upon the written request of any complainant disclose the basis of this decision pursuant to CIC § 1858.7. Findings of the Commissioner are subject to judicial review according to CIC § 1858.6 in conjunction with CIC § 1861. 09. Violations of these laws may lead to a suspension or revocation of parts or the entire certificate of authority of any insurer by the Commissioner who fails to comply with the provisions of this article, *see* CIC § 1861.14.

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296. *Id. Cf.* DiMUGNO & GLAD, *supra* note 292, § 66:8.

297. DE LA MORA & KOOK, *supra* note 293.

298. *Id.*

299. *Id.*

300. NATHANIEL S. SHAPO, 2 NEW APPLEMAN ON INSURANCE LAW LIBRARY EDITION §11.03 (2017).

301. DE LA MORA & KOOK, *supra* note 293.

302. *Id. See also Confidentiality of Underwriting Rules Filed with Rate Applications Pursuant to California Insurance Code Section 1861.05(B)*, CAL. DEP'T OF INS., (2018), https://bit.ly/3ED9URd (last visited Sept. 7, 2023).

CIC § 1861.05 para. c in connection with CCR § 2652.8 states that the Commissioner shall notify the public of any application by an insurer for a rate change.[303] According to § 1861.07, all information provided to the Commissioner pursuant to this article shall be available for public inspection. This comprises all pleadings filed pursuant to CCR § 2652.9. Under CIC § 679.9 lit. b, an insurer may be compelled to (upon request by the insured within 15 business days) disclose the reason(s) for the change.

Rate making is immutably dependent on data analysis. Consequently, data privacy and security are key. The provisions following CIC § 791 are designed to establish standards for the collection, use and disclosure of information gathered in connection with insurance transactions. This should maintain a balance between the need for information of, e.g., insurance companies, and the public's need for fairness in insurance information practices. Importantly, each insurance company must provide a comprehensive written information security program pursuant to CCR § 2689.14. This has to include administrative, technical, and physical safeguards for the protection of customer information. Also, an insurance company has to establish a regulatory mechanism to enable natural persons to understand what information is collected and to be able to verify them or dispute their accuracy. In that regard, the CIC generally provides for broad information rights disclosure. For example, according to § 791.08, an insured may submit a written request to an insurance company or insurance-support organization for access to recorded personal information.

B. Analysis

The greatest upside of the cooperation between Farmers and Zesty.ai certainly is its social welfare impact. It can grant greater access to the primary and standard insurance market. Generally, this promotes the goal of CCR § 2642.1, which clarifies that insurance is imbued with public interest.

Against this background, the Insurance Commissioner, Ricardo Lara, alarmingly noted that it becomes increasingly difficult for individuals to find standard fire insurance.[304] This is not only precarious given that homeowners insurance and its availability is likely to have severe societal impacts,[305] but also, these difficulties may affect real estate transactions on a broader scale. Further, Commissioner Lara is concerned that this trend could create even bigger problems such as a property value decline or less community fire mitigation.[306] If one believes these public statements, effectively, this cooperation should lead to an increase of 30,000 standard homeowner insurance policies, allowing

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303. *See* DE LA MORA & KOOK, *supra* note 293.

304. Ricardo Lara, *Notice: Request for a Moratorium on Non-Renewals After Recent Wildfire Activity*, CAL. DEPT' OF INS. (Dec. 5, 2019), https://bit.ly/3OvF8hy.

305. BAKER ET AL., INSURANCE LAW AND POLICY, *supra* note 9, at 280.

306. Lara, *supra* note 304, at 1.

consumers to step out of the residual market leading to a relaxation of the California Fair Access to Insurance Requirements (FAIR) Plan.[307]

As said, the foundational regulatory piece of California insurance rate making is the threshold that rates must not be excessive, inadequate, and unfairly discriminatory, CIC § 1861.05 para. a (*see* sub V/A/2). Regarding Farmers Insurance and Zesty.ai, there is no information available indicating that the Z-FIRE model led to excessive or inadequate rates. In contrast, it appears that the use of Zesty.ai's model allows Farmers Insurance to calculate fire insurance rates in a manner that allows the company to precisely price the premium. This, at least, seems to have been the case for the initial annual rate filing. The future will show if that remains true. Likewise, Zesty.ai's approach does not seem to unfairly discriminate against insureds. It appears, that the Z-FIRE model neither relies on prohibited traits or classes, nor does it treat similar situated insureds differently.

However, the rate filing process of Farmers Insurance (and Zesty.ai) raises different regulatory issues which exceed the above mentioned three-prong test. Most importantly, it is questionable how far the scope and breadth of public inspection under CIC § 1861.07 (1) affects innovation and what implications follow from that for enhanced consumer protection (2). Against this background, a narrowed public inspection and full regulatory reporting approach is developed (3).

1. Scope and Breadth of Public Inspection Under Proposition 103

California rate regulation has a broad public disclosure mandate. To this end, CIC § 1861.07 mandates that all information provided is subject to public inspection. As shown later (see sub 2) can public inspection (negatively) impact innovation and, in consequence, consumer protection. This is why it is important to assess the exact scope of California's public disclosure mandate. The scope of this has been subject to case law (a) and an opinion issued by the CDI (b).

a. *State Farm Mut. Auto. Ins. Co. v. Garamendi* (2004)

In *State Farm*, the Supreme Court of California had to decide on a dispute between State Farm Mutual Automobile Insurance Company and David Birnbaum.[308] Mr. Birnbaum successfully requested to see State Farm's community service statement, which the insurer deemed to be confidential as a trade secret. Upon request by State Farm, the Insurance Commissioner asked Mr. Birnbaum to return the obtained information, which he refused. The insurer filed

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307. *California OKs Farmers and Zesty.ai Wildfire Risk Assessments, Will Bring 30K New Homeowners Policies,* INS. J. (June 16, 2021), https://bit.ly/3v4dgcK. *See generally* BAKER ET AL., INSURANCE LAW AND POLICY, *supra* note 9, at 244.

308. State Farm Mut. Auto. Ins. Co. v. Garamendi, 32 Cal. 4th 1029 (2004).

an action for declaratory and injunctive relief. It claimed that the community service statement is confidential and not subject to public inspection pursuant to CIC § 1861.07.

Against this background, the Supreme Court of California found that the provision of CIC § 1861.07 determines the scope of public inspection.[309] Essentially, the court had to decide whether the exemption in CIC § 1861.07 regarding Government Code (GC) § 6254 para. d *vice versa* allowed to apply other exceptions of GC § 6254, notably para. k regarding trade secrets under CEC § 1060.[310] In other words, the question was whether CIC § 1861.07 only impedes the application of the two mentioned statutory non-disclosure privileges in the context of insurance rate control or any other non-disclosure privilege, too.

The court held that article 10 does not only regulate rate making but also includes those factors which are relevant for the actual rates and their fairness, availability, and affordability.[311] When interpreting the statute, the court laid down that it will look at the intent of the Legislature, the words of the statute from an usual and ordinary perspective, its scope and purpose, and the entire scheme of law to maintain harmonization and effectiveness.[312] Based on that, CIC § 1861.07 does not allow State Farm to rely on GC § 6254 para. k and that no confidentiality or trade secret exemption is permissible.

The court argued that use of "[a]ll information" indicates that there are no exceptions to the public inspection of information permissible.[313] The exemptions referencing to GC § 6254 lit. d and CIC § 1857.9 do not alter this since their applicability would nullify the goal of Proposition 103. Consequently, they constitute examples but not an exhaustive list.[314] Also, the purpose of Proposition 103 is to empower and strengthen the consumers position to fight against unlawful insurance practices.[315] Accordingly, this speaks for broad public inspection without exceptions. CIC § 1861.07, seen in context, is not ambiguous and its language captures various different objects. Consequently, the listed exemptions are just examples.[316] This interpretation is not altered by the fact that an insurer may rely on trade secret protection at a public hearing pursuant to § 1861.08.[317]

b. CDI on Confidentiality of Underwriting Rules Filed Pursuant to CIC §

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309. *Id*. at 1042.
310. *Id*.
311. *Id*. at 1041.
312. *Id*. at 1043.
313. *Id*.
314. *Id*. at 1044.
315. *Id*. at 1045.
316. *Id*. at 1046.
317. *Id*.

1861.05(B) (2018)

In 2018, the CDI published an opinion about the confidentiality of underwriting rules pursuant to CIC § 1861.05 lit. b in connection with § 1861.07. In essence, it reaffirmed the above court's finding.[318] The CDI emphasized that public inspection affects any information which helps to identify rules or factors relevant for fair, available, and affordable insurance.[319] In light of the above judgement the department clarified that the wording of § 1861.07 mandates a broad scope of public inspection, and that the listed exclusions are merely examples.[320] Notably, the CDI furthers the court's reasoning in stating that "any other statutory exemption from disclosure would also nullify the broad disclosure mandate of … § 1861.07."[321]

2. Implications with Innovation and Consumer Protection

Generally speaking, amidst technological change, the gap between regulatory goals and business strategies grows.[322] Applying certain traditional regulatory laws to disruptive technologies can lead to "highly restrictive results."[323] One prominent example considering that are potential conflicts of confidential or proprietary information regarding the AI in light of their disclosure, e.g., through regulatory disclosure or transparency rules.[324] International policy makers point out that algorithms are often "highly confidential in nature,"[325] especially if a company develops proprietary tools[326] In that sense, Zesty.ai considers its Z-FIRE model as proprietary (*see* sub V/A/1) raises the question of whether it is protected under California trade secret law (a. Subsequently, the implications for innovation (b and consumer protection (c need to be assessed.

a. Trade Secrecy of the Z-FIRE Model

According to California Civil Code (CCC) § 3426.1, all information, including a formula, pattern, compilation, program, device, method, technique, or process are generally protectable as trade secrets as long as it derives

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318. CAL. DEP'T OF INS., *supra* note 302.

319. *Id*. at 3.

320. *Id*.

321. *Id*. at 4.

322. Zekos, *supra* note 2, at 253.

323. Zetzsche et al., *supra* note 98, at 12.

324. *See* Lyon et al., *supra* note 124; Yu & Alì, *supra* note 68, at 6 et seq.; Zekos, *supra* note 2, at 240. *Cf*. EU-US Insurance Dialogue Project, *supra* note 38, at 2; Antje von Ungern-Sternberg, *Artificial Agents and General Principles of Law*, 60 GERMAN Y.B. INT'L L. 239, 252 (2018).

325. INT'L ASS'N OF INS. SUPERVISORS, *supra* note 20, at 11.

326. *Cf*. Talesh & Cunningham, *supra* note 1, at 1021; Tschider, *supra* note 71, at 714.

independent economic value (sub a) from not generally being known or ascertainable by outsiders (sub b).[327]

In California, courts decided that a trade secret is "unlimited to any particular class or kind of matter"[328] or compilation of information. Also, computer software has been identified as a trade secret.[329] Consequently, the Z-FIRE model and its underlying information as part of Zesty.ai's AI software can constitute a trade secret.

To determine the independent value, both direct and circumstantial evidence has to be taken into account. This comprises "the content of the secret and its impact on business operations" (direct) or the "amount of resources invested" (circumstantial).[330] Reasonable efforts are made, if employees are advised that a trade secret actually exists or access to it is restricted on a "need to know basis." The same applies where general access is controlled[331] or where an NDA was signed.[332]

The Z-FIRE model and the underlying information is essential for Zesty.ai's business model. Assuming the considerable research, data collection, and technology development required to create and use it, significant resources must have been required to develop this novel model. Lastly, it appears that Zesty.ai is keeping its Z-FIRE model and the information confidential, and it claims that its model is proprietary.

In sum, the Z-FIRE model and its underlying information constitute a trade secret which are protected as such.

b.   Implications with Innovation

Disclosing proprietary information has negative effects on innovation in various ways. To begin with, the publication of, innovative achievements may bring lesser competitive advantages.[333] Because of that, AI developer can feel lesser incentivized to invest in new software models and the like.[334] This might have even federal wide effects,[335] comparing jurisdictions with and without less broad disclosure rules.

Rigid disclosure rules may also lead to heightened market entry barriers.[336] This is because disclosure requirements cause higher regulatory compliance

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327.   *Cf.* Price II & Rai, *supra* note 84, at 791.
328.   Altavion, Inc. v. Konica Minolta Sys. Lab'y, Inc., 171 Cal. Rptr. 3d 714, 734 (Cal. App. 2014).
329.   S.O.S., Inc., v. Payday, Inc., 886 F.2d 1081, 1089 (9th Cir. 1989).
330.   *Altavion, Inc.*, 171 Cal. Rptr. 3d at 743.
331.   Whyte v. Schlage Lock Co., 125 Cal. Rptr. 2d 277, 287 (Cal. App. 2002); Courtesy Temp. Serv. v. Camacho, 222 Cal. App. 3d 1278, 1289 (Cal. App. 1990).
332.   MAI Sys. Corp. v. Peak Comput., Inc., 991 F.2d 511, 522 (9th Cir. 1993).
333.   Price II & Rai, *supra* note 84, at 788.
334.   *Id.* at 793.
335.   *Id.* at 811.
336.   Hillary J. Allen, *Regulatory Sandboxes*, 87 GEO. WASH. L. REV. 579, 612 (2019); Bathaee, *supra* note 66, at 893, 930.

costs. These increased costs make it harder for new players to enter the market. Moreover, they can further concentrate AI know how and skill at large firms and market players,[337] thus, undercut innovation drivers. Small but innovative market players are more likely to be barred from entering the market and engaging in competition. In this vein, in California, the CDI involves consumer advocates already from the very beginning upon request, which delays the rate making process further.[338] This does not only increase costs but also may lead to inefficient proceedings and to overly burdensome regulation. Particularly amidst the overall skepticism towards AI it must be feared that involved stakeholders hamper innovative goals.

Additionally, publicly disclosed AI can lead to follow-on effects by competitors meaning copying from other market players through fully transparent AI systems. This is already not desirable even when the copied AI works well. It would be easier for a competitor to just copy and use an existing software framework plus data instead of investing time and money to come up with a different and maybe better solution.[339] *A fortiori*, the effects are even worse where the copied algorithm plus data is not working well. This magnifies negative outcomes.

Broad transparency also bears the risk of manipulation and hacking. It poses significant cyber risks[340] or may even undermine an insurer's aim to fight fraud.[341] Where the public is broadly aware of AI related insight knowledge, adversarial agents are more prone to be able to access personal customer information. This makes hacking more likely and negatively affects both insureds and insurers.

c.   Implications with Consumer Protection

Next, broad public inspection requirements may thwart the goal of protecting consumers and policyholders. As stated, a company intending to use AI can be reluctant to enter the California market because broad public inspection can hinder core business objectives.[342] Vast disclosure rules can create a race to the bottom. A potential consequence could be that insurance companies or InsurTechs settle in more loosely regulated jurisdictions.[343] This would deprive California consumers from the benefits of insurance innovation.

Moreover, the aforementioned follow-on effect also negative implications on consumer protection where market players are less inclined to search for

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337. *Id.* at 930.
338. DE LA MORA & KOOK, *supra* note 295. *Cf.* DIMUGNO & GLAD, *supra* note 292, § 66:6.
339. Price II & Rai, *supra* note 84, at 793.
340. Ungern-Sternberg, *supra* note 324, at 252. *See also* Price II and Rai, *supra* note 84, at 794.
341. EUR. INS. & OCCUPATIONAL PENSIONS AUTH., *supra* note 11, at 7.
342. Price II & Rai, *supra* note 84, at 810.
343. *Id.*

innovative ideas but to copy from competitors. In particular, creators would not improve a well-designed yet imperfect insurance product where competitors could easily copy the product, thereby depriving consumers of the improvements' benefits. Consumers, consequently, will bear the burden of decelerated consumers innovation.

On a different note, the use of AI may lead to better fraud detection and, in turn, lower the cost of fraudulent claims. As previously stated, this can lead to lower insurance rates and help consumers obtain fairer insurance (*see* sub III/B).

Zesty.ai's proprietary Z-FIRE model, for example, is a cornerstone of its business. It could lose a significant portion, if not all, of its value when becoming publicly available. That is because, while consumers might not understand how the AI works even with access the relevant information, competitors will. Benefits to consumers seem rather limited, while the advantage to competitors is likely enormous.

d.   Interim Conclusion

In sum, broad public inspection is likely to affect innovation and lead to a more limited use of AI in California, which may ultimately hamper consumer protection. Therefore, it is in the public interest to allow trade secret protection pursuant to CIC § 1861.07 and CCC § 3426.1.[344]

3. Narrowed Public Inspection and Full Regulatory Reporting

The Supreme Court of California's decision in *State Farm* (*see* sub V/B/1/a) and the CDI's opinion (*see* sub V/B/1/b) present a broad understanding of public disclosure. This is problematic for innovation and consumer protection. That poses the question of whether a narrowed public inspection coupled with full regulatory reporting (a) conforms with the current regulatory framework (b. In this regard, the practice of the CDI prior 2018 (c and the Associations and Agencies approach (*see* sub IV) provide relevant arguments (d).

a.   Scope and Design

1)   Narrowed Public Inspection

To balance the implications of disclosure with innovation and consumer protection, research recommends applying a patent-like protection to AI. This would not only bring socially beneficial disclosure rules but also allow for fairness and safety testing while stimulating innovation.[345] In particular, patent-

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344.   *See* Nader Mousavi & Matthew J. Kleiman, *When the Public Does Not Have a Right to Know: How the California Public Records Act is Deterring Bioscience Research and Development*, 4 DUKE L. & TECH. REV. 8 (2005).

345.   Tschider, *supra* note 71, at 715.

like protection should include "the availability of trade secret protection for part of the invention, … the exclusivity term, and … patent disclosure standards."[346]

While this approach would lead to a socially desirable disclosure while protecting the AI, it does not to be convincing for three reasons. First, it creates a novel legal regime combining separate concepts of patent and trade secret law. This bears the risk of legal uncertainty, which should be avoided particularly in the context of AI. Second, a patent like protection – at least in this context – is not desirable. To preserve a competitive insurance market and insurance innovation, patent-like protection should not restrict competitors, as it would be the case with an exclusivity term. Generally, "independent invention or reverse engineering"[347] is desirable in this context. In other words, insureds should profit to a greater extent from multiple and similar operating insurance innovators racing to the top instead of one company sitting on an exclusivity right. Third, research suggests that patent disclosure rules are not effective in practice.[348] The abovementioned fairness and safety testing requires good data design and adequate reporting.[349] Both are missing in patent practice.[350] Hence, disclosure seems to have a rather limited positive societal impact.

Instead, it appears more promising to allow insurance companies to rely on trade-secret protection in the form of narrowed public inspection. Such narrowed public inspection should entail all information except that which is confidential and protected as a trade secret. This affects not only the source code, but also (and critically) the "well-curated and labelled training data."[351]

However, any person who meets the criteria in CIC § 1861.10 must receive access to relevant and pre-selected information if she challenges an action of the Insurance Commissioner, such as the approval of a policy pricing.[352] Notably, a company must provide information in a way that allows an ordinary consumer to understand it. That supplies individuals and consumer protection agencies with an effective tool to hold both the Insurance Commissioner and the insurer accountable. Additionally, this approach in light with the existing regulation set forth by CRR § 2689.14 (*see* sub V/A/2). It is worth noting that any insight a person receives must be subject to a non-disclosure agreement. Comparatively, parts of this approach lean on the General Data Protection Regulation (GDPR),[353] which guarantees individuals a right to an accessible explanation, e.g., about the

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346. *Id*. at 720.
347. Price II & Rai, *supra* note 84, at 791.
348. *Id*. at 798.
349. *Cf. id*. at 799.
350. *Id*.
351. *Id*. at 792.
352. *Cf.* EUR. INS. & OCCUPATIONAL PENSIONS AUTH., *supra* note 11, at 42.
353. Regulation 2016/679 of the European Parliament and of the Counsel of 27 April 2016 on the Protection of Natural Persons with Regard to the Processing of Personal Data and on the Free Movement of Such Data, and Repealing Directive 95/46/EC (General Data Protection Regulation), 2016 O.J. (L119) 1.

logic involved.[354] From an AI point of view, this narrows the focus, e.g., on the "processes, methods, and strategies used to create algorithmic decision-making systems."[355] Narrowed public inspection, however, does not include the actual source code[356] or similar information, but only the individual result including the relevant data.[357] From an American perspective, this is also in light of the Fair Credit Reporting Act (FCRA).[358] This law requires credit-rating agencies to collect accurate and up-to-date data collected by credit rating agencies in the sense that clients should know, among other things, which data has been used.[359] In essence, a narrowed public inspection approach based on the ones of the GDPR and the FCRA, does not include proprietary, however, provides for individual access to readily understandable information. That approach favors not only innovation, but also consumer protection.

Proprietary information concerning the AI data or the labelled and structured data must not be published or accessed by the public. First, this requirement recognizes the proprietary interests of insurance companies and InsurTechs, which are interconnected with innovation and consumer protection (*see* sub V/B/2). Secondly, it better addresses the purpose of public inspection. In this vein, scholars have argued that full disclosure would be of no use, since the results of complex AI systems are not at all understandable.[360] As mentioned, it seems that full regulatory reporting benefits competitors, rather than consumers (*see* sub V/B/2/c). The approach argued for here, in contrast, grants individualized access with readily understandable information to consumers or consumer advocacy groups. By giving access to relevant data, this approach allows them to understand the individual rating decision of the insurer. It provides the ground for effectively challenging the rate-making of the insurance company without putting the company's proprietary information at stake.

Additionally, narrowed public inspection incentivizes competition. Insurance companies and InsurTechs have no reason to fear sunk costs due to unlimited public access to innovative insurance products and applications. Moreover, limited public inspection lowers the market's barriers to entry. That way, innovators face lower regulatory compliance thresholds, which are tied to lower compliance costs. Further, insurance companies or InsurTechs in California will not be at a stark disadvantage nationally because out-of-state insurance companies will not be able to access their proprietary information. With a narrowed public inspection, this information cannot be used by non-

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354.   Ungern-Sternberg, *supra* note 324, at 15.
355.   Tschider, *supra* note 71, at 713.
356.   *See* Price II & Rai, *supra* note 84, at 791.
357.   Bundesgerichtshof [BGH] [Federal Court of Justice] Jan. 28, 2014, Entscheidungen des Bundesgerichtshofes in Zivilsachen [BGHZ] VI ZR 156/13 (Ger.).
358.   *See* Fair Credit Reporting Act, 15 U.S.C § 1681.
359.   Truby et al., *supra* note 27, at 116.
360.   Yu & Alì, *supra* note 68, at 7.

California market players whose own trade secrets might even be protected as such. Similarly, consumers profit from narrowed public inspection. Beneficial financial innovation is less likely to happen in jurisdictions with burdensome regulations, ultimately opening the door to a race to the bottom. California consumers are likely to benefit from some trade secret protection as more insurance innovators enter the market. However, regulatory incentives are necessary for new players to enter the California insurance market. Moreover, non-disclosure privileges can prevent follow-on effects, which can harm innovation and consumer protection. Lastly, adversarial agents have only few or fewer attachment points where the public cannot easily access proprietary AI-related information. This is because restricted and, thus, protected internal data and source codes make it harder for those adversarial agents to attack AI systems of insurance companies.

After all, it could be shown that a narrowed public inspection approach should entail all information except that which is confidential and protected as a trade secret including, but not limited to, the source code and labelled training data of the actual AI.

2) Full Regulatory Reporting

Narrowed public inspection can potentially align innovation with consumer protection. However, it cannot stand alone. Full regulatory reporting to the CDI must follow. The latter should comprise all information without any exception, that is, including, but not limited to, confidential information protected by trade secrets. Among other things this comprises "information about model training, development, and validation."[361] The CDI could accurately and effectively conduct review and testing in-house, or, alternatively, actuarial, AI-consulting, and certifier firms could do so.[362] Targeting the opacity (i.e., the inability of humans to explain or inspect the inner workings) of algorithms is essential[363] and, from a broader perspective, serves not only explainability and transparency goals, but also the principle of fair, accountable, compliant, and safe AI (*see* sub IV/A). Full regulatory reporting is designed to probe the AI,[364] diminish errors and unethical functioning.[365] Also, it is designed to balance the disclosure of non-proprietary and the protection of proprietary information.[366]

The question, however, is whether it is possible to externalize the valuation and assessment of AI to third parties. Scholars argue that external players should

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361. Price II & Rai, *supra* note 84, at 795.

362. *See* Tschider, *supra* note 71, at 715

363. Price II & Rai, *supra* note 84, at 790, 794.

364. *Id*. at 795.

365. *Cf*. Ungern-Sternberg, *supra* note 324, at 14; Price II and Rai, *supra* note 84, at 783; Tschider, *supra* note 71, at 715.

366. *Id*. at 707. *See also* EUR. INS. & OCCUPATIONAL PENSIONS AUTH., *supra* note 42, at 43.

verify the technology.[367] Indeed, third party specialists might be well-suited to review and validate the proper functioning of AI. However, that raises concerns in the context of insurance regulation.

It does so mainly because of the regulator's public mission and accountability. As described above (*see* sub II/A), there are persuasive reasons to regulate the insurance sector. The exclusivity or predominance of private actors in AI assessment would compromise regulatory responsibility. Such conflict would significantly imperil democracy. This is because the valuation and assessment of AI touches upon crucial ethical questions and, in the context of insurance, also upon fundamental human rights. The actual review of AI and its conformity with ethical thresholds is should be a central responsibility of democratic dignitaries. Consequently, the regulator must strictly supervise external review and testing and be the final evaluator of the procedures and reviewer of third parties' assessments. Furthermore, third-party experts must be subject to rigorous confidentiality agreements. Otherwise, the benefits of narrowed public inspection identified above are at risk through the back door because of a leaking of proprietary information. Nonetheless, involving external parties naturally increases the risk proprietary information's leaking to other market players.[368]

Full regulatory reporting has another benefit to insurance companies and InsurTechs. Narrowed public inspection will eliminate the risk of publication of their proprietary information to the public and competitors. Consequently, they will have a greater incentive to comply with regulatory-inspection requests. In order to create a cooperative relationship with the regulator, insurers using AI will likely feel confident in reporting more information than they must report now. This allows the CDI to get a deeper insight into the AI, understand it better, and be more involved in the industry's practices.[369] Ultimately, given the public mandate of the Insurance Commissioner, consumer rights can be protected on a more granular level.

b. Conformity with CIC § 1861.07

Narrowed public inspection and full regulatory reporting can minimize negative implications on innovation and consumer protection. The question not yet answered, however, is whether this approach conforms with the current regulatory regime. This essentially depends on how far courts' interpretation of CIC § 1861.07 in *State Farm* reaches.

Notably, CIC § 1861.07 has been amended as of January 1, 2022 replacing GC § 6254 para. d with GC § 7929.000. However, both provisions contain

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367. Ford & Price II, *supra* note 93, at 20; Price II & Rai, *supra* note 84, at 793.

368. Ford & Price II, *supra* note 93; Price II & Rai, *supra* note 84, at 781.

369. Price II & Rai, *supra* note 84, at 796.

identical non-disclosure privileges for certain documents filed with state agency responsible for the regulation or supervision of financial institutions not altering the legal *status quo*.

Given its scope, this paper omits a constitutional analysis of whether an insurance company could further oppose public inspection on the basis of the Takings Clause.[370]

As said, the basis for broad public inspection under California insurance regulation is the Supreme Court of California's interpretation of CIC § 1861.07 in *State Farm* (*see* sub V/B/1/a). Even though the court laid down a fourfold approach to interpreting the statute, it did not strictly follow it. This article, however, will structure its analysis as outlined in the court's decision; (1) the intent of the Legislature,[371] (2) the words of the statute from an usual and ordinary perspective, and (3) and the entire scheme of law to maintain harmonization and effectiveness. Because the Legislature's intent and the statutory scope and purpose are substantially similar, they will be treated together sub.

1) The Legislature's Intent and Statutory Scope and Purpose

i. Background

Proposition 103, including CIC § 1861.07, in essence aims at lowering insurance rates and increasing the regulatory powers of the Insurance Commissioner.[372] Prior to 1988 in California, insurance companies were able to set their rates without public inspection "using a number of factors."[373] Insurers were not required to disclose how they weighed different factors. The CDI could only examine rates after they came into effect. However, that rarely happened[374] because of the attitude against unfair and excessive rates and the belief that new law should foster a competitive marketplace.[375]

Accordingly, section 2 of Proposition 103 reads that its purpose is "to protect consumers from arbitrary insurance rates and practices, to encourage a competitive insurance marketplace, to provide for an accountable Insurance Commissioner, and to ensure that insurance is fair, available, and affordable for all Californians."[376] Amendments of Proposition 103 by the Legislature,

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370. *See* MILGRIM ON TRADE SECRETS § 1.09 n. 679 (Matthew Bender, 2021) (citing Philip Morris v. Reilly, 312 F.3d 24 (1st Cir. 2002)).

371. The use of this term acknowledges that Proposition 103 reflects the intent of the people of California. However, both the Supreme Court of California and Article 10 of the CIC use the term "Legislature." For the sake of clarity, it is also applied here.

372. Ralph Nader & Harvey Rosenfield, *Proposition 103, Voter Information Guide for 1988, General Election: Propostions, California Ballot Propositions and Ballot Initiatives*, U.C. L. S.F. SCHOLARSHIP REPOSITORY 101 (1988), https://bit.ly/3xHOzEK (last visited Sept. 7, 2023).

373. *Id.* at 98.

374. *Id.*

375. *Id.* at 100–01.

376. *Id.* at 99.

therefore, must further this purpose.[377] This rationale is crucially important in critically assessing the court's interpretation below.

ii. The Court's Interpretation

In its finding that CIC § 1861.07 does not allow any confidentiality or trade secret exemption, the Supreme Court of California emphasized that this provision was driven by a "broad disclosure mandate"[378] Further, the court relies on the premise that Proposition 103 aims at fair, available, and affordable insurance in California and that the public hearing process should safeguard that rationale.[379] Proposition 103 should allow consumers to unitedly oppose insurance abuse and "foster … consumer participation in the rate-setting process."[380]

iii. Critical Assessment

In favor of the court's interpretation is the general rationale of Proposition 103 to protect consumers from arbitrary rates. In proposition 103, a broad disclosure mandate ensures to the greatest extent possible that rate making of insurance companies in California is transparent. Transparency, as a consequence, allows the assumption that any arbitrary behavior can be detected easier and faster. Also, from a historic point of view, the law introduced in 1988 turned the system of rate making upside down. Unlimited public inspection reflects the historic legal development and speaks for the court's determination. Likewise, consumer participation is at its fullest with full public inspection and provides the floor for unitedly opposing abusive insurance as insureds and stakeholders.

However, there are multiple arguments against the court's interpretation. First, Proposition 103 essentially aims to safeguard fair, available, and affordable insurance for all Californians. As discussed above (*see* sub III/B), one key opportunity of AI applications in the insurance sector is to increase the overall availability of insurance and insurability of insureds, as demonstrated by Zesty.ai. Zesty.ai is well suited to open the normal insurance market for thousands of Californians which otherwise had to rely on the residual market system. That way, it can also contribute to minimize negative contagious effects on different markets such as property value declination (*see* sub V/B). AI driven models, such as the Z-FIRE model, foster and underpin the above-mentioned goal of Proposition 103. This is even true regarding lines in which traditional actuarial risk modeling is unable to come up with prudentially sound rates, like

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377. *Id*. at 144.
378. State Farm Mut. Auto. Ins. Co. v. Garamendi, 32 Cal. 4th 1029, 1044 (2004).
379. *Id*. at 1045.
380. *Id*. (citing Nader & Rosenfield, *supra* note 372, at 100).

homeowner fire insurance. These positive effects may decrease if proprietary information must be released within a rate filing.

Second, the court itself acknowledges that the public hearing procedure of CIC § 1861.08 is meant to ensure fair, available, and affordable insurance. But it also states that an insurer can rely on trade secret privilege within such public hearing. Against this background, logic compels that referring to that exact same privilege in the context of CIC § 1861.07 is from the contrary likewise in conformity with the law. In other words: where the law allows the insurer to rely on trade secret privilege in a public hearing procedure which is based on the same rationale as proposition 103 it must equally apply pursuant to CIC § 1861.07.

Third, the law introduced in 103 aims to create a competitive insurance marketplace. In that sense, competition can lead to better products and, hence, benefit consumer interests. As said above, broad public inspection without confidentiality or trade secret protection could disincentivize technological innovation and undercut competition (*see* sub V/B/2/b. This, in turn, can hamper the rationale of Proposition 103 to create a competitive marketplace.

Fourth, limited public inspection and full regulatory reporting contributes to the overarching goal to achieve lower rates. Notably, with the introduction of Proposition 103, a significant roll back of rates of 20 % followed.[381] Similarly, the example of Zesty.ai shows that AI applications can lead to a greater availability of prudentially sound and lower rates allowing insureds to leave the residual market system. The Z-FIRE model uses vast data sets and advanced technology, which calculates affordable and sound rates. However, since the underlying information is proprietary, publicly disclosing models jeopardizes the goal to achieve lower rates.

Fifth, the changed law of 1988 intended to increase the accountability of the Insurance Commissioner through a public mandate and its regulatory powers. While this goal is fostered by a broad public disclosure mandate, it is not negated by allowing some kind of trade secret protection. The CDI still governs evaluation and assessment of the information used to price rates. Beyond that, it is possible that the regulatory powers of the Insurance Commissioner will be more effective with some trade secret protection in the rate filing process. Otherwise, an insurance company is not willing to disclose proprietary information. This is likely to lead to only limited insight and regulatory supervision during the rate filing by the CDI and the Insurance Commissioner. However, if only the CDI reviews a company's proprietary information, the company is likely to cooperate on a broader scale. Then, the publicly elected Insurance Commissioner finds itself in better shape to follow its public mandate. Importantly, this finding is not altered amidst some regulatory capture[382] which

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381. *Id.* at 98.

382. E. Dal Bo, *Regulatory Capture: A Review*, 22 OXFORD REV. ECON. POL'Y 203 (2006).

may diminish positive effects. Constituents will still hold the Insurance Commissioner accountable, who is naturally inclined to act in their interest. Also, the narrowed public inspection still allows for access pursuant to CIC §§ 1861.07, 1861.10. The parallel line of enforcement through consumers and consumer agencies is not altered.

Overall, non-disclosure privileges such as trade secret protection is not only in line with the Legislature's intent and scope and purpose of the statute, but also furthers the purpose of Proposition 103.

2) The Words of the Statue from an Usual and Ordinary Perspective

i. Background

CIC § 1861.07 at the time of the court's decision can be distinguished in two parts. First, the provision states that "all information provided to the Commissioner pursuant to this article shall be available for public inspection." Second, "the provisions of Section 6254(d) of the Government Code and Section 1857.9 of the Insurance Code shall not apply thereto." As mentioned, without legal effects GC § 6254 lit. d has been exchanged with word-for-word identical GC § 7929.000 (*see* sub V/B/3/b).

The proponents of Proposition 103 claimed that CIC § 1861.07 "is written in plain language [and that] [t]here are no loopholes or fine print."[383] Hence, the interpretation of the wording of the statute from an usual and ordinary perspective is extraordinarily important.

ii. The Court's Interpretation

The Supreme Court of California argued that the first sentence of CIC § 1861.07 "on its face"[384] broadly requires public disclosure. Notably, it adds that the second part does not alter that finding because the exemptions included only clarify to avoid nullifying the rationale of Proposition 103.[385] Namely, the court held GC § 6254 para. d does not allow applying, e.g., para. k.

The court supports this finding by citing precedence in which the statutory use of inclusive terms such as "all" do not create exclusivity regarding otherwise listed elements.[386] The court concludes that the second part of CIC § 1861.07 merely includes (non-exhaustive) examples.[387]

The court also rejects applying opposing precedence "where exceptions to a general rule are specified by statute, other exceptions are not to be presumed

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383. Nader & Rosenfield, *supra* note 372, at 100.
384. State Farm Mut. Auto. Ins. Co. v. Garamendi, 32 Cal. 4th 1029, 1043 (2004).
385. *Id.* at 1044.
386. *Cf.* Cal. Ass'n of Dispensing Opticians v. Pearle Vision Ctr., 143 Cal. App. 3d 419, 429 (1983).
387. *State Farm*, 32 Cal. 4th at 1044.

contrary legislative intent can be discerned."[388] This is because such rule only applies to ambiguous provisions which, seen in context, is not the case for CIC § 1861.07.[389] Where the language of a provision includes items rather exemplary and not conclusively.[390]

iii. Critical Assessment

The wording of CIC § 1861.07 is a strong argument favoring a limitless interpretation of the public inspection mandate. A usual and ordinary reader would understand "all" to include "the complete amount or number (of), or the whole (of)"[391] the subject in question, i.e., information submitted within a rate filing.

Applying the same standard to the second part, however, leads to a different result. Reading from an usual and ordinary perspective, the second sentence declares that the exemptions of GC § 6254 para. d/ § 7929.000 and CIC § 1857.9 *do not* apply in the context of CIC § 1861.07. On its face, and different than the court reasoned, there is no grammatical indication that these two should only serve as examples. Proposition 103 claims to be written in "plain language without loop holes [such that] nonlawyers can read it."[392] However, the court reaches its result only through the application of researching, analyzing, and applying precedence to interpret the wording of CIC § 1861.07. This contradicts the dictum of Proposition 103. Nonlawyers should be able to understand Proposition 103, since it claims to be written in plain language without loopholes. This raises doubts as to the persuasiveness of the court's use of precedence.

Additionally, it is particularly doubtful to interpret part two of CIC § 1861.07 as mere examples. The Legislature's intent to list only GC § 6254 para. d/ § 7929.000 and CIC § 1857.9 gives a strong argument that *only* these two should not be applicable. *E contrario*, it would have been an easy task to frame a broader exemplary scope of exemptions.[393] By precisely picking two particular provisions and even a distinct paragraph in one of these, it can be assumed that the Legislature intended to exclude only the listed exemptions.

This literal argument is supported from a historical point of view. Proposition 103 was introduced in 1988, and CCC § 3426.1 came into force in 1985 with The Uniform Trade Secrets Act.[394] The statutory trade secret privilege was well established in California law prior to the change of insurance regulation. There

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388. Mountain Lion Found. v. Fish & Game Com., 16 Cal. 4th 105, 116 (1997).

389. *State Farm*, 32 Cal. 4th at 1046 (2004) (citing Williams v. L.A. Metro. Transit Auth., 68 Cal. 2d 599, 603 (1968)).

390. *Id*. at 1046 (citing Estate of Banerjee, 21 Cal.3d 527, 539 n. 10 (1978)).

391. CAMBRIDGE DICTIONARY, https://bit.ly/3k68rJv (last visited Sept. 7, 2023).

392. Nader & Rosenfield, *supra* note 372, at 100.

393. *Cf*. Williams v. Superior Court, 5 Cal. 4th 337, 350 (1993).

394. *See* James H. Pooley, *The Uniform Trade Secrets Act: California Civil Code 3426*, 1 SANTA CLARA HIGH TECH. L. J. 193, 194 (1985).

is a strong indication that the Legislature was aware of this non-disclosure privilege. The legislature intended only to exclude GC § 6254 para. d/ § 7929.000 instead of also excluding trade secret protection according to CCC § 3426.1.

Also, the language of CIC § 1861.07 would be clearer if the legislature would have just skipped the second half of the provision and leave it with the mandate that "all" information simply is subject to public inspection. This would be in accordance with the above assessed intent, scope and purpose of the statute and in line with the decision of the Supreme Court of California in *Williams v. Superior Court*. The issue in that case was whether additional and external requirements to reject disclosure according to GC § 6254 lit. f are included in that exact same provision. The court held that reading the exceptions of CIC § 1861.07 as examples simply "finds no support in the statutory language."[395] Notably, "[i]t is not [the court's] task to rewrite the statute"[396] or "to insert what has been omitted."[397] The court's interpretation in *State Farm* of CIC § 1861.07 flips its wording upside down and, effectively, rewrites the statute inserting what was omitted by the Legislature.

This interpretation is supported by § 1861.025 para. b no. 1 lit. C which explicitly refers to two provisions but notably expands the scope of reference by saying "or any other provision". Another example is CIC § 1861.03, which cites certain statutes and entails the phrase "including, but not limited to". Both Article 10 examples show how Proposition 103 demonstrates exemplary reference. The second part CIC § 1861.07 does not match. In order to comply with the just mentioned legislative technique the second part of CIC § 1861.07 should read as follows: "the provisions, including, but not limited to, of Section 7929.000 of the Government Code and Section 1857.9 of the Insurance Code shall not apply thereto." This follows from an usual and ordinary perspective, while also taking other provisions within Article 10 systemically into account. Consequently, it does not rely on the *expressio unius est exclusio alterius* maxim (i.e., expression of one thing is the exclusion of another) maxim,[398] which is why it is not relevant whether this rule applies in the context of ambiguous statutory language.[399]

Furthermore, this interpretation is supported by the holding in *Williams v. Superior Court* where the Supreme Court of California held "[a]n interpretation that renders statutory language a nullity is obviously to be avoided."[400] The court, in this case, had to decide whether the exception of GC § 6254 lit. f only applies

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395. *Williams*, 5 Cal. 4th at 350.
396. *Id.* at 354.
397. *Id.* at 357 (citing Code Civil Procedure § 1858 and Sec. Pac. Nat'l Bank v. Wozab, 51 Cal.3rd 991, 998 (1990).)
398. Williams v. L.A. Metro. Transit Auth., 68 Cal. 2d 599, 603 (1968).
399. *Cf.* State Farm Mut. Auto. Ins. Co. v. Garamendi, 32 Cal. 4th 1029, 1046 (2004).
400. Williams v. Superior Court, 5 Cal. 4th 337, 357 (1993).

during an investigation. The court denied this question, due to the clear wording of the provision.

Against this background, it was demonstrated in *State Farm* that it would inevitably render the second part of CIC § 1861.07 as useless to be interpreted as mere examples.[401] There is no regulatory value in listing two precise exemptions as being excluded from the scope of CIC § 1861.07 where any other confidentiality exemption is also excluded. The nullifying effect of the court's interpretation crystallizes from an *argumentum e contrario*; if any confidentiality or trade secret privilege provision would be impliedly excluded, the second part could have been entirely omitted without any legal effect. Effectively, this renders it as useless surplusage. The wording of the second part of CIC § 1861.07 only serves a purpose if the excluded exemptions serve as singular exclusions.

The decision in *State Farm*, however, poses the question whether *Williams v. Superior Court* is good law in that regard.[402] As a basis, this addresses the question whether it is feasible to rely on the rule of avoiding an interpretation nullifying the statute. The court in *State Farm* seems to deny that where the statute is not ambiguous.[403] The court relied on *Williams v. Los Angeles Metropolitan Transit Authority*. In *Williams*, the court had to decide whether a minor's cause of action is protected until age of majority pursuant to Code of Civil Procedure (CCP) § 352 even though CCP § 342 and GC § 945.6 poses a contradicting time limit.[404] The court decided that the minor is protected because the "maxim *expressio unius est exclusio alterius* … does not apply … [since] [i]t cannot perform its proper role of resolving an ambiguity in statutory language … [where there is] neither ambiguity or uncertainty."[405] According to the court, the provisions read together cause no conflict as to the protection of minors since it "presents no question of meaning".[406] Even though this may give guidance as to how to apply the *expressio unius est exclusio alterius*-maxim, it did not dissent from the rule of *Williams v. Superior Court*. A court should still avoid interpreting a statute that would nullify itself. Therefore, the reasoning of the State Farm case does not alter the above interpretation in accordance of *Williams v. Superior Court*.

Even if one disagrees, *Williams v. LA Metro.* is still distinguishable from *State Farm*. In the former case the court had to interpret the relation of CCP § 352 to CCP § 342 in conjunction with GC § 945.6. The legal question resulted from the singular exception in CCP § 342 referring to GC § 945.6. This, at first glance, was in conflict with CCP § 352, which was not mentioned in CCP § 342.[407] The

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401. *State Farm*, 32 Cal. 4th at 1045.

402. *Id*. at 1046.

403. *Id*.

404. Williams v. L.A. Metro. Transit Auth., 68 Cal. 2d 599 (1968).

405. *Id*. at 603.

406. *Id*.

407. *See also* Mountain Lion Found. v. Fish & Game Comm'n, 16 Cal. 4th 105 (1997).

court reasoned that minor protection was "a deep and long recognized principle of the common law"[408] and mandated not to apply GC § 945.6 in the context of and contradicting CCP § 352.

Fundamentally, the court solved the conflict of CCP §§ 352 and 342 based on the overarching common law principle of minor protection. The court in *State Farm* did not identify minor protection or any similar deep and long recognized principle of common law to unwind the alleged conflict of trade secret protection according to CCC § 3426.1 and CIC § 1861.07. This could only possibly have been the case if the court would have recognized the purpose of Proposition 103 as "long ingrained in the public policy of the state"[409] as a similar overarching principle in favor of limitless public inspection. However, the recognition of trade secret privileges within public hearings pursuant to CIC § 1861.08 shows that there is no such strict abundance of non-disclosure privileges in the context of insurance rate filing.

Additionally, the interpretation of the court in *State Farm* is doubtful for a different reason. The court declared the two exemptions listed in CIC § 1861.07 as inapplicable because they would nullify the broad disclosure mandate of Proposition 103. The CDI goes beyond that and stated that *any* disclosure exception would nullify this mandate.[410] This interpretation heavily relies on the broad scope and nature of GC § 6254 para. d/ § 7929.000 and CIC § 1857.9.

GC § 6254 para. d/ § 7929.000 would exempt all applications filed with any state agency responsible for the regulation or supervision of the issuance of securities or of financial institutions, including, but not limited to, insurance companies. CIC § 1857.9 para. i states that the information provided pursuant to para. a shall generally be confidential and not revealed by the department, except an analysis not disclosing confidential information.

In light of these provisions, the court rightfully pointed out that applying both would severely negatively impact or nullify the purpose of Proposition 103. This is because these confidentiality exemptions broadly affect the information provided to the CDI. However, this is not the case for all exemptions, like a trade secret privilege according to CCC § 3426.1. To be in conflict with CIC § 1861.07, CCC § 3426.1 would need to have a "similar nature,"[411] i.e., a nullifying effect, on the public inspection mandate of Proposition 103. However, it is more limited because it does not affect all information shared with the Department, this does not automatically nullify CEC § 1861.07.

At least in the case of Zesty.ai, CCC § 3426.1 would protect the Z-FIRE model as a trade secret which would not exempt all the information provided to

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408. *Williams*, 68 Cal. 2d at 602.

409. *Id*. at 604.

410. CAL. DEP'T OF INS., *supra* note 302, at 4.

411. State Farm Mut. Auto. Ins. Co. v. Garamendi, 32 Cal. 4th 1029, 1046 (2004) (citing Estate of Banerjee, 21 Cal.3d 527, 539 (1978)).

the CDI in the course of the rate filing from public inspection. Different than GC § 6254 para. d/ § 7929.000 and CIC § 1857.9, trade secret protection according to CCC § 3426.1 has a limited scope without a nullifying effect regarding the disclosure mandate of Proposition 103. The CDI's interpretation that excludes every non-disclosure privilege, is not persuasive.

The wording of CIC § 1861.07 only excludes GC § 6254 para. d/ § 7929.000 and CIC § 1857.9 para. a, but not trade secret protection, according to CCC § 3426.1. Particularly, these sections do not display mere examples. If one disagrees, at least a narrowed trade secret privilege according to CCC § 3426.1 does not nullify CIC § 1861.07. Therefore, generally CIC § 1861.07 does not exclude all non-disclosure privileges as long such has not a nullifying effect.

3) Scheme of Law Maintaining Harmonization and Effectiveness

i. The Court's Interpretation

Regarding the scheme of law to maintain a harmonized and effective application, the Supreme Court of California noted that the ability of an insurer to rely upon a trade secret privilege within a public hearing pursuant to CIC § 1861.08 does not change its broad public inspection interpretation regarding CIC § 1861.07.[412] Therefore, prohibiting any non-disclosure or trade secret privilege in light of already submitted information according to CIC § 1861.07 does not impede an insurer from "prevent[ing] disclosure of trade secret information not already provided to the Commissioner pursuant to article 10."[413]

ii. Critical Assessment

This view is supported by the fact that CIC §§ 1861.07 and 1861.08 are two distinct provisions governing two different proceedings. In light of this, it seems rational to allow trade secret protection for the latter but not for the former. At second glance, however, this distinction is not persuasive.

To begin, it is arbitrary to allow trade secret protection within one face of the rate filing and to deny within the other. The court itself argued that the public hearing proceeding according to CIC § 1861.08 is a tool to ensure fair, available, and affordable insurance (*see* already sub V/B/(b)/(1). This is a cornerstone of Proposition 103. If that is true, applying the law consistently in the pursuit of fair, available, and, affordable insurance trade secret protection must *uniformly* be permitted or denied. Substantially, there is no difference in both provisions. Protecting proprietary information in the context of CIC §§ 1861.07 and 1861.08 affects the same right, which is generally worth or not worth protecting.

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412. *State Farm*, 32 Cal. 4th at 1046.
413. *Id*. at 1047.

Moreover, interpreting CIC § 1861.07 according to the scheme of law should also include provisions beyond Article 10 regarding risk pricing and reporting. This is because, as the above cited precedence shows,[414] one law never stands alone and isolated from the other. An isolated assessment of the scheme of law would render this interpretation method useless. An effective and harmonized scheme of law must be seen holistically, i.e., taking the entire CIC into account.

In other contexts, the CIC recognizes the confidentiality interests of insurance companies. For example, in the context of wildfire risk reporting according to § 929 para. b, certain insurance companies must disclose, among other things, the specific numerical or other fire risk score and source of fire risk score of each individual policy. This may also include, if applicable, the premium and the ZIP code. This disclosure, however, is confidential according to CIC § 929.1. That kind of protection of confidential information shows, in the broader context, that the scheme of law recognizes proprietary information of insurers as protection worthy. This also has to apply – to a limited extent (*cf*. Sub V/B/3/a– in the context of rate making as the insurer is similarly protection worthy.

c.   The CDI's Practice Prior to 2018

In addition, the approach taken here reflects historical regulatory practice at the CDI. Before its legal opinion letter in 2018, the Department often agreed with insurance companies not to publicly disclose certain parts of a rate submission if the insurer established to the Department's satisfaction that the specified material should be treated as proprietary.[415] To ensure that consumer advocates could meaningfully participate in the rate approval process, the Department permitted them to inspect proprietary parts of a filing provided they signed a nondisclosure (confidentiality) agreement.[416] In short, the narrowed public inspection approach advocated in this article is consistent with both the law and regulatory practice at the CDI before 2018.

However, even after 2018, the approach developed here anticipates a regulatory change, which Ken Allen, Deputy Commissioner of the Rate Regulation Branch of the CDI already addressed. He said that "[a]t some point maybe we do need to look at … and fine tune some of the regulations to keep up and apply with the changing, evolving technology in AI."[417] Applying CIC § 1861.07 in accordance with a narrowed public inspection and full regulatory reporting is exactly on this line.

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414.   *See* Williams v. L.A. Metro. Transit Auth., 68 Cal. 2d 599 (1968).

415.   Telephone Interview with Adam Cole, General Counsel of the CDI between 2007 and 2015 (Mar. 30, 2022).

416.   *Id*.

417.   Zesty AI, https://bit.ly/3v7lz7B (last visited Sept. 7, 2023).

d. The Associations and Agencies Approach

Lastly, the narrowed public inspection approach conforms with regulatory agencies' take on innovation, consumer protection, and the protection of proprietary information. For example, the NAIC highlights in its core principles on AI that although transparency is a central principle and element of AI for insurance regulation, confidentiality, and proprietary information must be protected (*see* sub IV/A). This also corresponds with the EU-US Insurance Dialogue Project.[418] Similarly, IAIS notes that the use of modern data analysis tools not only has to be transparent and explainable, but should also bear proprietary interests in mind (*see* sub IV/C). Moreover, EIOPA's key strategic goal is to achieve a balance between innovation and consumer protection (*see* sub IV/A). This balance is maintained when narrowing the public inspection scope of CIC § 1861.07. Transparency and explainability must be balanced with the proprietary interests of AI owners and users. To this end, it would be inadequate if every insurance innovator was required to disclose proprietary information to the public. This does not achieve the goals of explainability and transparency (*see* sub III/A/1) Instead, the Z-FIRE model is proportionately explainable and transparent where consumers are able to understand the individual outcome and used data sets. A narrowed approach, complemented by full regulatory reporting, provides proportionately explainable and transparent AI through strict regulatory monitoring. At the same time, proprietary interests are not overblown. In this vein, also the IAIS mentions that innovation should be allowed as long as it brings no harm to consumers (*see* sub IV/C). Because some trade secret protection seemingly benefits consumer protection (*arg. e contrario* sub V/B/2/c, the interpretation suggested here is in line with international policy makers who also favor consumer protection in its published papers and positions.

After all, this proposal is not only consistent with Proposition 103 and CIC § 1861.07, but it also would provide a proportionate application of the law with respect to consumer protection and financial stability, ensuring effective and innovative regulation.[419] The burdensome interpretation of CIC § 1861.07 would likewise be substituted with flexible but safe deregulation.[420]

4. Interim Conclusion

The Farmers Insurance and Zesty.ai cooperation, in the context of rate making and pricing, is a stellar example of how AI can work in practice. In particular, it helps tackle the lack of fire insurance in California for homeowners. This is very important, given that in the last 10 years wildfires have posed significant threats to thousands of Californians. From an aspirational point of

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418. EU-US Insurance Dialogue Project, *supra* note 38, at 1.
419. EUR. INS. & OCCUPATIONAL PENSIONS AUTH., *supra* note 21, at 18.
420. Zetzsche et al., *supra* note 98, at 52.

view, Farmers Insurance and Zesty.ai apply AI in a way that directly helps insureds obtain coverage, providing financial security for a crucial part of their lives. The Z-FIRE model bears great opportunities and benefits, leading to both increased consumer service and, importantly, greater insurability the same as a relaxation in the residual market scheme.

A brief analysis of the California insurance regulation in the context of rate making showed that insurance rates must not be excessive, inadequate or, unfairly discriminatory. To safeguard this objective, Proposition 103 introduced broad public inspection rules and enhanced the accountability of the Insurance Commissioner, allowing the public to follow and inspect any rate application of an insurer in California. The Supreme Court of California and the CDI interpreted the law in a way which does not allow non-disclosure privilege. This comes with significant implications for innovation and consumer protection. Full transparency can hamper the incentive for insurance companies and InsurTechs to invest and apply AI, thereby minimizing or erasing positive effects of AI for consumers.

After all, California rate making law should be interpreted differently. The legislative intent, scope and purpose, wording of CIC § 1861.07, and the scheme of law shows that some non-disclosure privilege is in conformity with CIC § 1861.07 and, in the broader context, Proposition 103. A narrowed public inspection combined with full regulatory reporting can solve the tension between public inspection and innovation and consumer protection. Insurance companies should be allowed to rely on trade secret protection regarding proprietary AI information to avoid any stifling effect on innovation and to achieve greater consumer protection. At the same time, they should be required to fully report to the CDI. This ensures a complete understanding and oversight by the authority. This promises to help avoiding malfunctioning AI. Also, it allows the regulator to constantly understand how the industry actually applies AI and which regulatory problems may arise from it. That way, innovation and consumer protection are best served.

VI.   CONCLUSION AND OUTLOOK

A. Conclusion

AI is greatly affecting the insurance sector. Insurance has always been data driven. The evolution of advanced data analysis tools in the context of AI, consequently, is very interesting for insurance companies. Current use cases comprise, e.g., rate making, fraud detection and investment advice.

Amidst this general finding, U.S. insurance companies cannot rely on one regulatory scheme. U.S. insurance regulation is subject to state law. On the federal level, a driver for uniformity is the NAIC, who works on and publishes model laws.

Currently, there is no undisputed definition of AI. In light of that, it is useful to apply the definition laid down within the European Commission's proposal for a regulation of AI. This precise but flexible approach provides a practical working definition. As of now, only simple forms of AI are in use.

Regulators must, in turn, assess risks and opportunities stemming from the use of AI in the insurance sector. This highly depends on the actual use case and individual circumstances. However, with regard to risks, AI brings systemic and non-systemic implications. Systemically, for example, AI can destabilize the sector due to contagion risks. Non-systemically, AI poses compliance risks on various ends. Regarding opportunity, AI promises to bring agency cost reduction and improved risk assessment.

Further, regulatory agencies in the U.S., EU, and worldwide are actively working on the topic of AI and big data. The NAIC installed several working groups and committees to tackle new technological developments. Importantly, it published high-level Principles on AI in 2020 focusing on five aspects (*see FACTS*). EIOPA has been even more active. Most notably, an expert group set up by the authority published six AI Governance Principles. The IAIS, so far, has taken a less explicit approach by not publishing any principles of AI yet. However, the association published a couple of papers on AI and big data analysis.

Because the application of AI in insurance companies poses different risks and opportunities depending on the use case and the jurisdiction, this work focused on one example. Namely, the cooperation between Farmers Insurance and Zesty.ai in California. Zesty.ai used its Z-FIRE model to price insurance rates and the CDI approved the filed rates of Farmers Insurance in 2021. This is noteworthy since the California rate making laws are very strict and provide for strong consumer protection. The analysis particularly examined on one key implication stemming from the California rate making laws, namely, the impacts of broad public inspection on proprietary AI information. In that regard, Zesty.ai deems its Z-FIRE model as proprietary. However, the Supreme Court of California in *State Farm* laid down a restrictive understanding of CIC § 1861.07. It said that this provision does not allow trade secret protection. This interpretation is backed by an opinion published by the CDI in 2018.

Against this background, the Z-FIRE model is likely to be protected as a trade secret under CCC § 3426.1. Revealing this kind of proprietary information can lead to lesser competition, increased cyber risks, and fewer cooperation with the regulator. As a result, this not only hampers innovation, but also has negative implications for consumer protection. A limited public inspection backed by a full regulatory reporting can dissolve this tension. It stimulates innovation through trade secret protection, but allows consumers to still have insight in how the insurer prices its rates subject to a non-disclosure agreement. At the same time, the CDI gets full access to hold the insurance companies accountable. Since

this contradicts the court's reasoning and the CDI's opinion, it was a key motivation to closer assess them.

In doing so, it appears that the Legislature's intent, scope and purpose of CIC § 1861.07, its words, and scheme of law point towards a different interpretation. The current law allows some trade secret privilege, which favors innovation and consumer protection. Consequently, CIC § 1861.07 should be interpreted to require a narrowed public inspection while demanding full regulatory reporting. That way, insurance companies are best incentivized to research and use AI. The Insurance Commissioner is likely to have greater access to proprietary information, allowing optimal regulatory review. Further, the consumers benefit from innovation and competition while still having a say in the rate application process.

The cooperation of Farmers Insurance and Zesty.ai exemplifies how technological change poses fundamental regulatory questions. Ken Allen noted that "today's regulations [are] pretty much the same as they were in the mid-90s. AI use is exploding … and is going faster than the regulators can keep up with it. … Getting back to the regulations, while the technology and use is advancing, the regulations we have to apply are the same."[421] Also, the IAIS highlighted that the existing frameworks are simply not designed for machines carrying out certain functions or roles. Authorities must apply advanced supervisory skills and roles (*see* sub IV/C). There are good reasons to argue for regulatory action (*see* sub VI/B). The above analysis of CIC § 1861.07 showed that the main burden seems to be rather a political and social but not technological one.[422]

B. Outlook

AI faces the insurance sector and regulator both with risks and opportunities. The current law is not always able to find adequate answers. In the future, amidst the continuous, fast-evolving change, this gap is likely to grow. Therefore, scholars argue for a hard-law financial regulation on AI before harm occurs.[423] In that manner, EIOPA highlights that "[f]acilitating innovation is not about de-regulation"[424] and the European Commission notes that AI requires a modern type of regulation.[425] A different approach is voluntary regulation. This would provide market players the greatest flexibility. Especially in the U.S., this has been the case for some areas of financial regulation. However, one of the lessons

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421. ZESTY AI, https://bit.ly/3v7lz7B (last visited Sept. 7, 2023).

422. Danielsson, *supra* note 102.

423. Truby et al., *supra* note 27, at 111.

424. EUR. INS. & OCCUPATIONAL PENSIONS AUTH., *supra* note 21, at 17, 34.

425. *Proposal for a Regulation of the European Parliament and of the Council Laying down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts*, at 73, COM (2021) 206 final (Apr. 22, 2021).

of the GFC was that "voluntary regulation does not work"[426] Scholars rightfully point out that this, eventually, would lead to greater customer vulnerability, risk exposure, and weakening of the entire financial system.[427] A "Wild West environment that exposes the systemically vital financial sector to risk and uncertainty"[428] must be avoided. Thus, a voluntary consensus standard does not seem appropriate.[429]

The aforementioned argues in favor of explicit financial AI regulation. This would also be in line with the more stringent regulatory approach after the GFC. However, too tight regulations may stifle innovation *a fortiori*.[430] It is important to apply the same regulation to the same risk.[431] It seems that this, at the moment, can neither be achieved through extensive AI regulation nor by voluntary regulation.

In the literature, there are multiple approaches to minimize the regulatory gap in a careful and considerate way. Two of them are especially noteworthy; first, this applies to the concept of regulatory sandboxes. This concept will be assessed with a focus on California. Second, it is questionable whether AI expertise for board members of insurance companies should be required.

1. Regulatory Sandbox in California

In the last years, policy makers, legislatures, regulators and scholars have increasingly discussed the implementation of so-called regulatory sandboxes to address the technological development in the financial sector. Regulatory sandboxes as a concept describe "a regulatory 'safe space' for innovative financial institutions and activities underpinned by technology [and it] creates an environment for businesses to test products with less risk of being 'punished' by the regulator for non-compliance. In return, regulators require applicants to incorporate appropriate safeguard to insulate the market form risks for their innovating business."[432] The aim is to foster a competitive innovative market place.[433]

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426. Christopher Cox, *Chairman Cox Announces End of Consolidated Supervised Entities Program*, U.S. SEC. & EXCHANGE COMM'N (Sept. 26, 2008), https://bit.ly/3ECGZwA.

427. Truby et al., *supra* note 27, at 111.

428. *Id.* at 117.

429. *See* Vought, *supra* note 11, at 7.

430. *Cf.* Truby et al., *supra* note 27, at 111–12.

431. *Cf.* EUR. INS. & OCCUPATIONAL PENSIONS AUTH., *supra* note 21, at 17 (discussing in the context of InsurTech).

432. Zetzsche et al., *supra* note 98, at 26; Brian R. Knight & Trace E. Mitchell, *The Sandbox Paradox: Balancing the Need to Facilitate Innovation with the Need of Regulatory Privilege*, 72 S.C. L. REV. 445, 449 (2020). *Cf.* Vought, *supra* note 113, at 7; COHEN, *supra* note 3; Chiu & Lim, *supra* note 5, at 385. *See also* Bertolini, *supra* note 181, at 309 ("deregulation areas").

433. Zetzsche et al., *supra* note 98, at 13.

Although this concept first came up in the context of FinTech, it is equally important in the context of insurance regulation.[434] For example, in the U.S., ten states have enacted regulatory sandbox laws for FinTech *and* InsurTech.[435] Recently, the North Carolina Regulatory Sandbox Act of 2021 came into force.[436] In its § 169-2, the law summarizes that, among others, InsurTech is subject to transformation given the technological changes. Notably, it was determined that the current regulatory law is stifling AI innovation given that technology was not equally important to the business of insurance when it was originally enacted. Nowadays, market players need more flexible regulation to be able to run controlled tests on new products. North Carolina's legislature also finds that a regulatory sandbox would enhance legal certainty by endorsing company testing, which, in turn, would make, make the state more attractive compared to states without a sandbox.[437]

At a high level, the benefits of such a regulatory InsurTech sandbox are to provide the market transparency and replicability.[438] Research shows that generally, regulators implement that kind of regime to promote innovation, foster market development and competition, and increase economic growth.[439] Also, it sends important signals to the market to support financial innovation[440] because regulators display openness to new technological developments and it provides the ground for new innovations favoring consumers.[441] From a more granular level, a regulatory sandbox is seen to enhance communication between the regulator and the company, innovation and competition.[442] Moreover, it allows to better understand how innovation works and which risks come along with the use of enhanced technology.[443] Additionally, regulatory sandboxes can stimulate the development and use of not yet fully compliant AI.[444] Just as human decision makers are not perfect, consequently, AI systems should not strictly be expected to be so if they already statistically do a better job than humans.[445] In essence,

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434. *Cf. id.* at 33 (highlighting the importance to expand FinTech limited regulatory sandboxes to InsurTech).

435. These are Arizona, Florida, West Virginia, Hawaii, Nevada, Vermont, Kentucky, Utah, Wyoming, and North Carolina. Richard B. Levin et al., *Hardly Child's Play: North Carolina Joins the Growing Number of States with a FinTech Regulatory Sandbox* (Oct. 19, 2021), https://bit.ly/39c70XY.

436. H.R. 624, 2021 Gen. Assemb., Sess. 2021 (N.C. 2021).

437. *Cf. id. See also* Ross P. Buckley et al., *The Rise of FinTech: Building Fintech Ecosystems: Regulatory Sandboxes, Innovation Hubs and Beyond*, 61 WASH. U. J. L. & POL'Y, 55, 70 (2020) (discussing benefits).

438. Zetzsche et al., *supra* note 98, at 26.

439. *Id.* at 30.

440. Buckley et al., *supra* note 437, at 71; Allen, *supra* note 336, at 611.

441. Allen, *supra* note 336, at 632.

442. Zetzsche et al., *supra* note 98, at 38; Allen, *supra* note 336, at 632.

443. Zetzsche et al., *supra* note 98, at 38; Allen, *supra* note 336, at 632.

444. *Cf.* Theodore Claypoole, *How Perfect Will AI Need to Be?*, (Dec. 8, 2021), https://bit.ly/38hHcsL. *See also* Allen, *supra* note 336, at 603.

445. *Cf.* Claypoole, *supra* note 444. *See also* Zekos, *supra* note 2, at 258.

impossibly high standards should be avoided,[446] and the regulatory sandbox can keep innovative trends alive without consumer protection falling short.

The downsides circle around negative signals to the market, a lack of standardization and cost reduction, lack of transparency, and the difficult to achieve balance between regulated and non-regulated entities.[447] Most notably, some fear that a regulatory sandbox will lead to a race to the bottom which can harm consumer concerns.[448]

Currently, there is no global solution optimally favoring the benefits and limiting the downsides. The Legislature and regulators have to follow a well-balanced approach taking into account all individual circumstances.[449] The multiple benefits of a regulatory sandbox, when adequately addressing and recognizing downsides in the individual circumstances, still make it a viable regulatory tool.[450] This is particularly true where the downsides are cushioned by supplementary measures. These are a testing and piloting environment, special charter scheme, the possibility to transition to operating under a regular license,[451] or establishing innovation hubs.[452] Above all, particular attention has to be devoted to consumer protection.[453]

Now, transmitted to California, a regulatory sandbox for InsurTechs can bring significant improvements. This is because California insurance regulation is rather strict. There are indications that the stricter the regulation is the greater are the expected benefits of a regulatory sandbox.[454] This is because in this case a sandbox opens up an experimental area for innovation where current regulation do not allow for such. Another factor pushing regulatory sandboxes into the spotlight in California is the traditionally strong start-up scene.[455] More broadly speaking, in California, a regulatory sandbox in the context of AI and insurance promises to stimulate innovation. At the same time, the CDI can closely monitor the processes and, more importantly, ensure the appropriate level of consumer protection. As already mentioned (*cf.* sub V/B/3), a sandbox could not only incentivize market players to openly share a wide array of information, but also create a channel for the CDI to learn and understand potential future systemic and non-systemic risks.[456] For example, depending on the actual design concept, a regulatory sandbox is well suited to benefit societal welfare including consumer

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446. Vought, *supra* note 113, at 2.
447. Zetzsche et al., *supra* note 98, at 40. *See* Knight & Mitchell, *supra* note 432, at 462.
448. *Id.* at 447, 461.
449. *Cf.* Allen, *supra* note 336, at 581, 583.
450. Knight & Mitchell, *supra* note 432, at 448.
451. Zetzsche et al., *supra* note 98, at 56.
452. Buckley et al., *supra* note 437.
453. *Cf.* Allen, *supra* note 336, at 583; Knight & Mitchell, *supra* note 432, at 451.
454. Zetzsche et al., *supra* note 98, at 59.
455. *Cf.* Buckley et al., *supra* note 437, at 60.
456. *Cf.* Allen, *supra* note 336, at 581; Zetzsche et al., *supra* note 98, at 38.

protection.457 This is because appropriately monitored and regulated innovative insurance products can help increase insurability, thus, social welfare. Simultaneously, it can limit the risks stemming from modern technologies.458

On a federal level, an insurance regulatory sandbox in California would be in line with the U.S. approach to improve innovation.459 Moreover, comparatively in the European Commission's proposal, EU wide AI related sandboxes are suggested460 which is equally reflected on international level.461

All of this strongly speaks in favor of a regulatory sandbox. However, it also has been mentioned that such an approach depends on the expertise of the regulator.462 Otherwise, the sandbox regulation is likely to be inadequate, e.g., unintentionally allowing too high risks.463 In other words, a key benefit of a regulatory sandbox lays in an exchange of knowledge among the company using modern technologies and the regulator.464 The CDI has not issued anything with regard to AI or the like. Contrarily, it seems that the expertise and resources are limited (so far). The Department rather will have to rely on external consultants to assess AI risks and opportunities instead of conducting the analysis internally. Therefore, an insurance regulatory sandbox in California highly depends on the precondition of an evolution of the CDI.

Against this background, the CDI should become a "'data-driven' and 'digital-intelligence-led'"465 regulator. The modern regulatory landscape requires a different skill set mandating the active cooperation of lawyers, economists, actuaries, and data scientists.466 Also, the IAIS points out that authorities must possess/apply advanced supervisory skills and tools (*see* sub IV/C). Regulatory innovation and RegTech are key. That means the use of technology for regulatory activities such as monitoring.467 This may either happen in house or through third-party providers.468 At a minimum, the regulator has to provide sufficient in-house expertise to validate and assess the third-party findings. In the future, the CDI should be able to facilitate the necessary regulatory oversight autonomously, and the NAIC can play an important role in achieving that; it can provide important education and training for state insurance

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457.   *Cf*. Allen, *supra* note 336, at 581; Zetzsche et al., *supra* note 98, at 38.

458.   *Cf*. Allen, *supra* note 336, at 581; Zetzsche et al., *supra* note 98, at 38

459.   Vought, *supra* note 113, at 2.

460.   *Proposal for a Regulation of the European Parliament and of the Council Laying down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts*, at 3, COM (2021) 206 final (Apr. 22, 2021).

461.   INT'L ASS'N OF INS. SUPERVISORS, *supra* note 135, at 23.

462.   *Cf*. Allen, *supra* note 336, at 637.

463.   Zetzsche et al., *supra* note 98, at 39.

464.   *Id*.

465.   INT'L ASS'N OF INS. SUPERVISORS, *supra* note 21, at 27.

466.   *Id*.

467.   Zetzsche et al., *supra* note 98, at 41, 52.

468.   INT'L ASS'N OF INS. SUPERVISORS, *supra* note 21, at 27.

regulators regarding technological driven supervisory changes and challenges. A respective policy change towards technically well-equipped state regulators is pivotally important.

In sum, a California insurance regulatory sandbox promises to be a key piece in the closer future to deal with the fast-evolving digital transformation the insurance sector is confronted with. It can also serve as a trial stage for future technological regulation, may it be principle- or rule-based.[469] This may help the CDI to maintain effective regulation, oversight and to foster innovation being in conformity with essential regulatory goals, such as consumer protection. In this vein, banking sandbox rules should be considered simultaneously.

2. AI Expertise for Board Members

Poor corporate governance of insurance companies regarding AI can lower the public trust in the sector and lead to systemic risks (*see* sub III/A/1). Similarly, insurance companies face compliance risks which may lead to board or corporate liability[470] (*see* sub III/A/2). Generally, the board of directors plays a fundamental role in steering the insurance company's business. The same is true regarding the compliance with regulatory laws and standards. This raises the question whether board members should be required to prove AI expertise before entering office.

In the EU, under Art. 42 Solvency II Directive accompanied by Art. 258 para. 1 lit. d Solvency II Regulation, people effectively running the insurance company need to meet the fit and proper requirements.[471] Art. 42 para. 1 lit. a, b Solvency II Directive provides that a board member is fit and proper if their professional qualifications, knowledge, and experience are adequate to enable sound and prudent management, and if they are of good repute and integrity. Further, EIOPA and its expert group explicitly mention personal qualifications and responsibilities.[472] Sound and prudent management in an insurance company using AI is dependent on whether the board is actually technologically capable.[473]

Such explicit rules are not always apparent in U.S. insurance regulation, such as in California. It remains to be seen when the NAIC's will publish an AI and ML model governance framework (*see* sub IV/A), and whether this will be widely or even uniformly adopted at state level. This, in turn, raises the question

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469. Allen, *supra* note 336, at 605, 641.

470. *See*, *e.g.*, Chiu & Lim, *supra* note 5, at 360 et seq.; Ungern-Sternberg, *supra* note 324, at 5 et seq. (describing the debate about AI accountability and liability).

471. *Cf*. Meinrad Dreher, VERSICHERUNGSAUFSICHTSGESETZ MIT NEBENGESETZEN: KOMMENTAR § 24 para. 54 et seq. (2018).

472. EUR. INS. & OCCUPATIONAL PENSIONS AUTH., *supra* note 11, at 50; EUR. INS. & OCCUPATIONAL PENSIONS AUTH., *supra* note 42, at 48.

473. *See* Christian Armbrüster & Lukas Böffel, *§ 24, in* BECK'SCHER ONLINE-KOMMENTAR ZUM VAG, 19 paras. 23 and 23.1.

whether board members of an insurance company already implicitly should have to provide technological knowledge or expertise.

Amidst the systemic and non-systemic risks stemming from AI, insurance companies already need to provide knowledge about the current and future technological status quo.[474] This includes risks and pitfalls. AI brings a new dimension of risks to the table which, in turn, require an enhanced corporate governance including board qualifications. This requires at least a basic understanding of functioning of AI[475] if not a new skill set[476] at management level. Board members bear the ultimate responsibility for the use of AI.[477] Consequently, they should increasingly be able to consider the digital transformation[478] to monitor any potential risk from AI and ML[479] and to oversee selection and activities of AI implementation.[480] In light of that, scholars convincingly argue that board members are faced with oversight duties to ensure that the used AI is stable, not prone to management errors, and is in compliance with existing legal requirements.[481] Ultimately, the extent and particularity of this knowledge depends on the complexity of the used AI. General AI will require very detailed expertise and in-depth knowledge, whereas narrow AI, depending on the particular use case, may not require much more than a basic understanding.

Against this background, the NAIC corporate governance models laws can serve as attachment points. Insurance regulators have a look on the experience and good character of a companies' management when filing for a license.[482] For example, the NAIC Organization and Ownership of New Insurance Companies Model Law[483] requires in its first section that the business experience of the organizers, promoters, backers, and incorporators shall be included in the filing. Business experience may well serve as a gateway to ask for AI related knowledge. Another example are the NAIC's Corporate Governance Annual Disclosure Model Act[484] and Regulation.[485] Both require annual reporting from insurers on their governance practices and oversight of critical risk areas. In that

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474. Śmietanka et al., *supra* note 7, at 3.

475. Möslein, *supra* note 181, at 11; Eur. Ins. & Occupational Pensions Auth., *supra* note 11, at 50.

476. Hall, *supra* note 16, at 7.

477. Eur. Ins. & Occupational Pensions Auth., *supra* note 11, at 50.

478. Zekos, *supra* note 2, at 260.

479. *Cf.* Lee et al., *supra* note 136, at 16.

480. *Cf.* Möslein, *supra* note 181, at 11.

481. *Cf. id.* at 11.

482. Cohen, *supra* note 57; Guenter & Ditomassi, *supra* note 48, at 32, 39.

483. MDL 320-I: Organization and Ownership of New Insurance Companies Model Law, (Nat'l Ass'n of Ins. Comm'rs Model Laws, Regulations, Guidelines, and Other Resources 1995).

484. MDL 305-I: Corporate Governance Annual Disclosure Model Act, (Nat'l Ass'n of Ins. Comm'rs Model Laws, Regulations, Guidelines, and Other Resources 2014).

485. *Id.*

sense, the qualifications, expertise and experience of each board member with regard to the needs of the insurance company can be put in context with AI knowledge.[486] Also, it could be possible for an insurer to discuss the use and implications of AI within the annual filing, for example, under a discussion of business conduct/ethics,[487] business strategy,[488] or market conduct decision making.[489]

The aforementioned is also in light with the NAIC's high level principles on the use of AI. According to *FACTS*, in particular, the accountability principle entails that AI actors shall be held responsible and accountable. The compliance principle requires that AI actors have sufficient knowledge and resources to comply with the law and to avoid (un-)intentional violations. Further, AI must be secure, safe, and robust. This should maintain compliance with the law under reasonably foreseeable use. After all, appropriately designed AI requires that the board members provide sufficient knowledge to be able to meet these standards.

This call for specific technological knowledge in the U.S. is supported by a comparative view. Generally speaking, IAIS claims that the system of governance should be fit for purpose when using and applying AI (*see* sub IV/C). However, this will require some adjustments. EIOPA claims that a certain degree of technological knowledge shall be at least taken into account or is, in some instances, even necessary.[490] Accordingly, it is a good practice to establish AI, Data and Ethics Committees.[491] Further, the German Federal Financial Supervisory Authority (BaFin), emphasized that board members must provide adequate technological knowledge if material business decisions are based on AI.[492]

In sum, board members of insurance companies should be required to prove AI competency. The level of knowledge also depends on the individual circumstances and jurisdictional particularities. Generally, board members should have a basic understanding of what AI is, how it is applied, and which risks and probabilities stem from paradigmatic use cases. Under U.S. law, this depends on the states. State Insurance Departments should consider to releasing sector specific guidelines[493] in which they posit clear guidance as to AI expertise of board members.

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486. *Id.* at §§ 5(C)(1), (D)(1).
487. *Id.* at § 5(D)(2).
488. *Id.* at § 5(E)(3)(e).
489. *Id.* at § 5(E)(3)(h).
490. EUR. INS. & OCCUPATIONAL PENSIONS AUTH., *supra* note 21, at 17.
491. EUR. INS. & OCCUPATIONAL PENSIONS AUTH., *supra* note 11, at 51.
492. BaFin, *Big Data und Künstliche Intelligenz: Prinzipien Für Den Einsatz Von Algorithmen in Entscheidungsprozessen* (Jun. 15, 2021), https://bit.ly/3L7Ybwn.
493. *Cf.* INT'L ASS'N OF INS. SUPERVISORS, *supra* note 21, at 5; Vought, *supra* note 113, at 7.