# REGULATION OF FOOD SAFETY THROUGH COMPULSORY INSURANCE

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Abstract

*This Article explores the potential value of insurance as a substitute for government regulation of food safety, with special attention to the regulatory environment in China. Successful regulation of safety requires information in setting standards, licensing conduct, verifying outcomes, and assessing remedies. The article shows that the private insurance sector has technological advantages in collecting and administering the information relevant to setting standards, and could outperform the government in creating incentives for optimal behavior. It thus provides a justification for making liability insurance compulsory in the food production of distribution industry.*

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*Liability insurance could help increase supervision by insurance companies over food companies –*
– Xu Jinhge, China's FDA[1]

**I. Introduction**

Regulating food safety is a daunting task for the government, because it requires enormous amounts of information. Milk containing melamine, fish tainted by carcinogenic antibiotics, crops contaminated by pesticide, all pose risks that are hard to monitor effectively. More than any other product, foods pass through many hands in the chain of distribution, with risks in every step of the way. Food products are vulnerable to a wide variety of contaminants and toxins, which require specialized testing to detect. Food that is inspected and found safe may spoil and become unsafe over time, requiring repeat monitoring. And, even when detected, it is difficult to identify the cause of food contamination and to use sanctions to incentivize safety.

The standard approach to food safety relies primarily on "ex ante regulation" by government: setting standards and procedures to monitor the safety of food before it reaches consumers. Ex ante regulation is an administrative regime of command-and-control, focusing on licensing of food processors and distributors, on periodic inspections and audits of facilities, on sampling food lots, and on compulsory recalls—all to implement compliance with standards of safety and to prevent unsafe foods from reaching retail markets. It is primarily a prevention, rather than a deterrence, regime.

In addition to ex ante regulation, food safety is also governed to some extent by forms of "ex post regulation," relying on courts to levy sanctions on wrongdoers after harm occurs. Ex post regulation has two primary branches, tort law and criminal law, both of which implement a backward looking fault-based regime, focusing on punishment and compensation. Sanctions also have a deterrent effect, creating incentives for production and distribution of safer food. In the area of food safety, where prevention is often perceived as the correct approach, the deterrence technique of ex post regulation is often a secondary supplement to agency based ex ante quality control.

[1] Xu Wei, *Liability insurance proposed for food industries,* China Daily (July 3, 2014, 07:02 AM) available at http://www.chinadaily.com.cn/china/2014-07/03/content_17638955.htm (last visited Nov 7, 2014)

Both American and Chinese food safety law rely to great extent on ex ante government regulation. In the U.S., the Food Safety Modernization Act of 2010[2] is aimed at prevention of food safety problem for domestically produced and imported food. It gives the government powers to license facilities and to inspect, suspend, and recall food. In China, the 2009 Food Safety Law[3] was enacted to put in place a heightened system of licensure and inspection that implements specialized standards, and to allow mandatory recalls.[4] Previously, the old Food Hygiene Law allowed government official to inspect food facilities and distribution.[5] But after the 2008 tainted milk scandal, China toughened its regulation, established various risks monitoring and assessment mechanism, mandating food safety standards, licensing and inspecting food producers and distributors, licensing food additive producers, and mandating recalls.[6] It aims at "prevention first, risk management, and entire process control", and avows to establish "the strictest supervision system." [7]

Both the U.S. and the Chinese law rely to a more limited extent on ex post safety regulation to improve food safety. Products liability law allows harmed individuals to bring tort actions. Chinese courts can, for example, award enhanced damages when food safety violations result in physical and financial loss, up to ten times the product

[2] Cite FSMA (http://www.gpo.gov/fdsys/pkg/BILLS-111hr2751eas/pdf/BILLS-111hr2751eas.pdf)
[3] Food Safety Law of the People's Republic of China (Standing Committee of National People's Congress, 2009)
[4] John Balzano, *China's Food Safety Law: Administrative Innovation and Institutional Design in Comparative Perspective,* 13 Asian-Pacific Law & Policy Journal 23 (2012).
[5] Food Hygiene Law of the People's Republic of China (Standing Committee of National People's Congress, 1995, repealed in 2009) Arts. 19, 20, 22 & 27.
[6] Food Safety Law of the People's Republic of China (Standing Committee of National People's Congress, 2009) Arts 11, 13, 19, 29, 43, 44, & 53.
[7] Food Safety Law of the People's Republic of China Art. 3 (Amended) (Draft for Public Comments) (Standing Committee of National People's Congress, June 30, 2014), available at http://www.npc.gov.cn/npc/xinwen/lfgz/flca/2014-06/30/content_1869695.htm (last visit Nov 2, 2014).

price.[8] An in the wake of recent food safety fiascos, criminal sanction are more commonly used to punish—and deter—those at fault.[9]

Despite the enactment of new statutes that give greater powers to agencies to monitor food safety, and despite and the availability of private suits and criminal sanctions, food safety continues to be a major issue of concern. In China, the challenges are enormous because so much of the food industry consists of small low-capitalized, food processors scattered along the supply chain.[10] It is also a daunting regulatory problem because of the multiple overlapping government authorities charged with commanding different aspects of food production, and the inconsistent application of standards by local authorities, which are plagued by poor funding and weak incentives to carry out rigorous safety inspections.[11]

Recognizing that, due to the enormous information challenges public enforcement can only go so far, lawmakers are looking to delegate some of the burden of food safety monitoring to intermediaries. In a competitive market economy, firms would respond in a decentralized manner to consumer demand for safety, by developing reputation for safe handling (through trademarks or through rating services). For

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[8] Food Safety Law of the People's Republic of China (Standing Committee of National People's Congress, 2009), Art.96

[9] The Chinese Criminal Law penalizes the production and sales of substandard, and poisonous and harmful food products. Criminals can be sentenced to criminal detention, fines, confiscation of illegal gains, imprisonment, and death penalty for those activities. See Criminal Law of the People's Republic of China (National Peoples' Congress, promulgated in 1997 and revised in 2011) Arts. 141, 143, & 144. For example, in 2009 a Chinese court in Hebei sentenced two men--Zhang Yujun and Geng Jinping to death for their role in the production and sale of melamine-tainted milk that killed at least six children and made nearly 300,000 ill in the Sanlu milk scandal. See *Death sentences given in Chinese milk scandal*, New York Times (February 2, 2009), available at http://www.nytimes.com/2009/01/22/world/asia/22iht-milk.3.19601372.html?_r=0 (last visit Nov 9, 2014); See also Xinhua: "*三鹿"刑事犯罪案犯张玉军耿金平被执行死刑*" available at http://news.xinhuanet.com/legal/2009-11/24/content_12532123.htm (last visit Nov 9, 2014) Earlier 2014, a Chinese court in Shandong also convicted three criminals for manufacturing and selling "gut oil": one was sentenced to death penalty with two-year probation, and the other two were sentenced for life imprisonment. See "*轰动国内的制售地沟油案件济南宣判 朱传峰获死刑*" available at http://money.163.com/14/0107/18/9I0MQ8S600254TI5.html (last visit Nov 9, 2014)

[10] See Liu Wei, "Safe Food for All Should Be the Recipe," *China Daily*, March 15, 2007; Geoffrey S. Becker, *Food and Agricultural Imports from China*, CRS Report for Congress (2008), available at http://www.fas.org/sgp/crs/row/RL34080.pdf.

[11] Drew Thompson and Hu Ying, *Food Safety in China: New Strategies*, I Global Health Governance (Fall 2007).

example, consumers demand safe cars and markets respond as automakers compete over safety features and showcase their safety ratings.

The law can do much to prompt the emergence of intermediary-based solutions to food safety regulation. One approach, featuring prominently in the U.S. food safety act, is to rely on private third-party auditors and private laboratories to inspect, certify, and assure the safety of food facilities.[12] This, for example, is a critical component of regulating food imports, since the importing country cannot administer a monitoring bureaucracy outside its borders, and must outsource to certified private agencies these tasks.[13] Another solution, found in China's Food Safety Law, is to rely on retailers to perform some enforcement actions. The manager of a market or a fair, for example, has a duty to inspect the vendors and their merchandise, and upon failure will be held jointly liable for the vendors' food safety incidents.[14]

In addition, the China's Food Safety Law encourages consumer organization to supervise, and industry associations to self-regulate.[15] Food retailers, for example, may want to go beyond the legal safety requirements, and bolster the reputation of their brands by regulating the standards that their suppliers must meet. They may establish private procedures for inspection, certification, and compensation that vary from those found in public law.[16]

The quest for non-governmental solutions to food safety has produced various creative proposals, ranging from hygiene ratings schemes, compulsory bonds, delegation of regulation to intermediaries, and more.[17] This article focuses on one form of private regulation of food safety that has received little attention, but which can provide a powerful complement, and sometimes even an alternative, to government enforcement:

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[12] FDA FSMA, Sec. 307, 202.
[13] Bamberger & Guzman, Importers as Regulators 202-206, Erol Meidinger 237-243
[14] Food Safety Law of the People's Republic of China (Standing Committee of National People's Congress, 2009), Arts. 52 & 90.
[15] Id. Art 7-10.
[16] Meidinger 239-241.
[17] See, e.g., Import Safety: Regulatory Governance in the Global Economy 215 (Cary Coglianese et al. eds., 2009). The success of hygiene ratings for restaurants is being debated in the empirical literature. See Jin & Leslie; Daniel Ho.

insurance.[18] The idea is simple: if food sellers have to purchase liability insurance to cover harms from injurious food they sell to consumers, their insurers can step in and help shape the incentives for the food sellers to maintain high standards of safety.

It is often thought that insurance undermines incentives for safety. Known as the moral hazard problem, the concern is that insured parties, shielded from liability, have the incentive to act more recklessly. This view, however, ignores that fact that insurance is more than risk sharing. It is also a contract though which insurers create incentives for their clients to engage in particular risk-mitigation measures. Due to such contractual arrangements, policyholders overcome the moral hazard problem and may, in fact, take more care than they would in the absence of insurance.[19]

The reason insurance could act as an effective regulator is that it has some of the best tools to solve two fundamental problems of food safety regimes—the problem of information and the problem of incentives. Like public regulators, insurers who sell liability insurance policies have to assess the distribution of harm and determine the desirability of safety measures. In order to price insurance policies correctly, insurers have to make accurate predictions on the likelihood of harm. Insurers provide discounts for safe facilities, and measure these discounts by the degree of reduced liability that is associated with increased safety. And, like courts, insurers have to administer claims ex post, and thus they develop the institutional capacity to verify harms and determine the comparative causation of other parties.

Relative to government regulators, insurers may have superior information skills. In other areas in which insurance is sold—for example property, auto, and environmental liability insurance—the industry developed templates to regulate behavior in ways that are potentially more finely tuned, more information-sensitive, and setting higher standards of safety, than some forms of government control.

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[18] Previously, Tom Baker examined the role that insurers might have in a scheme of import safety. See Tom Baker, *Bonded Import Safety Warranties*, in Import Safety: Regulatory Governance in the Global Economy 215 (Cary Coglianese et al. eds., 2009); The idea of insurance as regulation of food safety was discussed briefly in Omri Ben-Shahar and Kyle Logue …

[19] Zhu Ningning (朱宁宁): *Experts Point out: China Urgently Need to Mandate Food Safety Liability Insurance(专家指出:中国急需建立食品安全强制保险制度),* Legal Daily, (July 31, 2014) available at http://epaper.legaldaily.com.cn/fzrb/content/20140731/Articel03002GN.htm (last visit Nov 7, 2014)

Insurance contracts also create incentives for improved safety. If their insurance costs depend on their safety practices, food processors and sellers have the incentive to raise their own safety standards, to be audited more often, and to maintain a good history of safety performance. These qualities make insurance cheaper.

The idea of insurance as regulator of food safety has particular relevance in China. Article 78 of the Food Safety Law wants the state to "encourage the establishment of food safety liability insurance system."[20] Likewise, the General Office of the State Council identifies food safety liability insurance as a priority, holding that the Chinese government should "issue guiding opinions on carrying out pilot programs mandating food safety liability insurance, and select key industries and areas to carry out pilot programs for mandatory food liability insurance."[21] While these initiatives still fall short of *compulsory* insurance, some localities in China have taken the next step of mandating liability insurance in for some distributors of food. Shanghai, for example, has started to implement a compulsory insurance scheme for large food wholesalers and supermarkets in some key high-risk areas such as dairy product, baby food.[22] Similar pilot program have sprung elsewhere.[23] With these developments in place, the paper proposes a general adoption of compulsory liability insurance to address food safety concerns.

Thus, the basic argument of this article is that if insurance has better information and better incentives to set efficient standards of conduct and to enforce them, it would

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[20] Cite FN 2 in Anna's memo

[21] Notice on Issuing the Key Work Arrangements for Food Safety in 2014(2014 年食品安全重点工作安排的通知)(General Office of the State Council, April 2014), Section 4 (3) ("研究建立食品安全责任强制保险制度。制订出台关于开展食品安全责任强制保险试点工作的指导意见，确定部分重点行业、重点领域试点食品安全责任强制保险制度…") available at http://www.gov.cn/zhengce/content/2014-05/27/content_8827.htm (last visit Nov 3, 2014).

[22] Chi-Han Ai: *Compulsory food safety liability insurance to be launched in Shanghai ("* Key industries that were first involved are "dairy product, baby food, cooking oil and other major food businesses, as well as large food wholesalers and supermarkets.") UrbaChina, (February 24, 2014), available at http://urbachina.hypotheses.org/8874; See also *Shanghai to Carry Out Food Safety Liability Insurance* (上海推广食品安全责任险**)** People's Daily (Feb 24, 2014) available at http://www.zj.xinhuanet.com/sszg/2014-02/24/c_119467300.htm (last visit Nov7, 2014)

[23] Chen Yu (陈屿): *Pilot Work On Food Safety Liability Insurance in Hubei Province(湖北省食品安全责任保险试点工作)* **avai**lable at http://www.gov.cn/xinwen/2014-10/10/content_2762001.htm **(**last visit Nov 3, 2014).

be desirable to "outsource" some regulatory functions that are ordinarily performed by government.[24] The argument therefore provides a different rationale for compulsory liability insurance than one commonly offered, which focuses on transfer of risk.[25] Part I of this article sets up the general claim, that insurance can act as a private regulator of safety. It shows that in many other areas, insurance creates incentives for policyholders to take precautions and prevention measures, and can do so more effectively than the government. Part II discusses the conditions for insurance to succeed as food safety regulator.

## I. Insurance as Private Regulation of Safety

### A. Regulatory Techniques in Insurance

Insurance is the business of information management. It uses information in performing its basic technique of "actuarialism"—setting premiums according to expected harms. A driver buying auto insurance, or a firm buying liability insurance, pay premiums that reflects the information the insurer has about the risk for that specific driver or firm.

It is often less appreciated that insurers use information not only to *reflect* and existing risk, but also to *reduce* it. That is, insurers have to solve not only the adverse selection problem (sorting policyholders according their different risk types), but also the moral hazard program (creating incentives to reduce safety risk).

Insurers have the incentive to prompt their policyholders to reduce the risk, because it makes premiums lower, more affordable, and more competitive. For example, auto insurers that require policyholders to install electronic data recorders in their cars

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24. We use the term "outsource" to mean the "farming out" of particular government functions to third parties. The term is often used refer to a firm's choice to contract out for some production rather than generate it in house. The same principle, however, can be applied to government functions.

25 Lu Yan (卢燕): *On the Necessity and Feasibility of Constructing Food Safety Liability Insurance* (构建食品安全强制责任保险的必要性与可行性), Commercial Times, 2008 Vol.32; Liu Peng, Sun Yanru (刘鹏, 孙燕茹): *Compulsory Food Safety Liability Insurance System in China: An Institutional and Process Analysi*s, Wuhan University Journal (Philosophy and Social Science) Vol. 67 No. 4 , July 2014 111-116.

have caused drivers to derive more carefully, and were able to reduce the price of auto insurance and increase their market share.[26] Or, property insurers offer discounts to policyholders that install anti-theft or anti-fire measures. The remainder of this section describes the general tools that insurers have to reduce safety risk. These, I argue, are "regulatory" tools—mirroring the techniques that are deployed by law in pursuing the same goals: regulate safety in society.

Ex Ante Regulation By Insurance

*Risk-Based Pricing.* First, insurers can induce greater safety by offering premium discounts for reduced risk. Charging a lower premium to a policyholder that installs a particular safety device creates incentives to utilize these devices. Insurers use two pricing techniques that directly affect safety behavior. One technique is "feature rating," in which insurers examine the insured's individual risk preparedness characteristics and adjust premiums accordingly.[27] For example, a homeowner that installs smoke detectors receives discounted fire insurance premium; firms that require workers to wear hard hats could enjoy discounted workers compensation insurance premiums; and gas stations that install better underground oil tanks receive environmental liability insurance discount.[28] Another technique of risk-based pricing is "experience rating," in which insurers gather information about the insured's loss experience in the past and use that information to make prospective pricing adjustments.[29] Concerned with future

[26] Progressive Snapshot; See Stephen Womack, Spy-in-the-Car Boxes for Young Drivers Slash Accidents by a Fifth and May Save 40% on Insurance After a Year, **This Is Money**, http://www.thisismoney.co.uk/money/cars/article-2123201/Monitoring-habits-young-drivers-reduces-accidents-fifth-insurer-analysis-found.html (last visited Aug. 6, 2012).

[27] See **Abraham**, supra note **Error! Bookmark not defined.**, at 71–72; Baker & Farrish, supra note __, at 295.

[28] Haitao Yin, Howard Kunreuther, and Matthew White, *Risk-Based Pricing and Risk-Reducing Effort: Does the Private Insurance Market Reduce Environmental Accidents?*, 54 J. L. & Econ. 325 (2011).

[29] **Abraham**, supra note __, at 72. For a summary of the experience-rating process in workers' compensation insurance markets, see **Nat'l Council on Compensation Ins.**, **ABCs of Experience Rating** (2011), available at https://www.ncci.com/documents/abc_Exp_Rating.pdf. Retroactive adjustments to premiums for the current policy period based on loss experience during the period, sometimes referred to as "retrospectively rated insurance," is generally limited to large commercial insureds. Prospective experience rating, of course, is used in all types of insurance, including insurance sold to consumers.

insurance costs, drivers have greater incentives to avoid accidents that lead to premium hikes; and firms have a stronger incentive to keep workplace accidents to a minimum.

*Deductibles and Copayments.* Second, insurers create safety incentives for their policyholders by using deductibles and copayments.[30] The idea is simple: if policyholders have to bear some of the risk, more incentive to take care would be preserved. If the moral hazard is due to the shifting of risk to others, shifting part of it back to the policyholder reduces the moral hazard. A higher deductible means more cautious policyholder, and the reduction in the risk can be reflected in premium discount. Here, too, insurers need good data to figure out how different increases in the deductible affect the expected harm.

*Exclusions and Refusals to Insure.* Third, insurers can act as "gatekeepers" by refusing to insure applicants, or actions, that are too risky relative to the value they generate. When insurance coverage is legally required (or, when people are too risk averse to engage in activity uninsured), by refusing to insure an applicant whom they deem too risky insurers effectively act as licensors of the activity. If, for example, a ski resort must purchase liability insurance in order to operate, insurers can insist on maintenance of high safety standards at the resort or else refuse to insure, and drive the resort to either adjust or go out of business. Similarly, insurers can exclude coverage for overly risky conduct. it is often thought that liability insurers' refusal to cover intentionally caused harms is a way to deter policyholders from creating intentional harms.

These regulatory techniques—premium discounts, deductibles, and refusal to insure—are all implemented contractually. Insurers use the insurance contract as a form of private code of conduct, telling their policyholders how to behave with respect to some key precautions. Through these contractual avenues, insurers can help their clients figure out which safety measures are worth the cost. Policyholders—individuals as well as sophisticated firms—don't have the necessary information to calculate whether some

30. Deductibles require insureds to pay a fixed amount "out of pocket" to cover insured losses before the insurance coverage kicks in to cover insured losses thereafter. Copayments typically require insureds to bear some fraction of each covered loss claim filed by an insured.

precautions justify their cost. Should an building owner install fire sprinklers? Should a firm replace its underground oil tanks to prevent leaks? Using their superior data, insurers can help their clients choose rational safety measures. For example, Pollution insurance underwriters send engineers to the sites to examine how landfills are built and how waste is disposed, to provide instructions where needed.[31]

The regulatory role of insurers is perhaps most visible when they insist that policyholders comply with codes of that impose standards exceeding the levels of safety required by public regulation. In environmental liability insurance, for example, insurers require (or offer significant premium discounts for) compliance with private environmental safety codes that are managed and audited by third parties and which are in some areas stricter than government environmental regulation.[32]

Ex-Post Regulation By Insurance

The techniques discussed above—using the insurance agreement to affect policyholders level of precautions—are all forms of private ex ante regulation, requiring compliance with safety standards to meet underwriting criteria. But insurers also act as ex-post regulators, similar to the way courts adjudicate post-accident disputes. When policyholders submit coverage claims, insurers use a network of adjusters to investigate, measure, and negotiate payouts. In fact, sometimes insurers are retained solely as claim administrators, without bearing the actual risk, solely to utilize their ex-post regulation capacity.[33] And in some important areas, most notably auto insurance, insurance adjusters implement simple rules for determination of fault and causation, for

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31. Corey Stein, Pollution Insurance Comes of Age: A Maturing Environmental Insurance Market Means Affordable Coverage Now is Available for Most Localities, **Pub. Mgmt.**, July–Aug. 1999, at 14, 15–16.

32. See **Ronald B. Mitchell**, **Intentional Oil Pollution at Sea: Environmental Policy and Treaty Compliance** 289 (Nazli Choueri ed., 1994).

33. These arrangements are common in health insurance, whereby insurers provide claims administration to self-insured employers, utilizing information systems and expertise in processing premium, claims, eligibility, billing, coordination of benefits, and regulatory compliance. See, e.g., Health Plan Administration, **Am. Health Grp.**, http://www.americanhealthgroup.com/Default.aspx?area=srv-claims_admin (last visited Aug. 6, 2012).

quantifying losses, and for settling disputes, that are either different or simpler than those that would apply in courts.[34]

Another way in which insurers regulate losses ex post is by helping to mitigate covered losses. After harm occurs, it is important to find the most effective ways to reduce its magnitude, by inducing policyholders and their victims take all reasonable post-accident steps. For example, auto insurers can control the post-accident cost of repair, health insurers can negotiate treatment discounts with health providers and deter over-utilization of health care, and environmental liability insurers can supervise the remediation and clean up costs. As we will see below, an important aspect of food safety regulation is post-contamination recall of food. This is a form of ex-post mitigation that insurers can administer.

**B. Insurance Versus Government Regulation**

The discussion above examined regulatory tools used by insurance to control the safety measures taken by their policyholders. The question I ask now is comparative: how does regulation by insurance compare to regulation of the same activity by government?

Government regulation of safety often takes the form of mandates. Cars must have seatbelts, homes must comply with electrical standards, coal mines must maintain mandatory safety rules; and airline pilots must meet certain training thresholds to be licensed. The mandates are one size fits all: actors have to either meet these requirements, or exit. They don't have to take measures that exceed these compulsory standards, and they cannot argue for exemptions on the grounds that the requirements are inefficient.

Regulation by insurance, on the other hand, offers a menu of safety choices and corresponding prices. Insurance does not mandate that drivers wear seatbelts, but those cited for violation may have to pay higher rates in the future. Homeowners do not have to comply with electrical code, but those with poor electrical infrastructure will have to

34. See **H. Laurence Ross**, **Settled Out of Court: The Social Process of Insurance Claims Adjustments** (2d ed. 1980).

pay higher fire insurance premiums. Similarly, unsafe workplaces have to bear costlier workers compensation insurance policies.

Not only does insurance enable policyholders to take lower levels of care if they so choose (and are willing to pay), it also matters whether policyholders take *more* than the legally mandated safety. Actors that take safety measure beyond the legal mandate enjoy further discounts in insurance cost. Fire extinguishers or burglary alarms may not be required for residential homes, but their installation would reduce property insurance premiums. Thus, unlike government regulation, which institutes uniform safety levels, insurance regulation of safety is a decentralized, whereby people self-select into the level of safety that best meets their circumstances. When policyholders are heterogeneous and vary widely in their cost of care and their exposure to risk, this "sorting" outcome is highly efficient.

Another important difference between government and insurance regulation is the effect on levels of activity. Ideally, society wants people to engage in activity only to the extent that the benefit from it exceeds the overall cost, which includes the harm to others. When government mandates safety through ex ante regulation, people who comply with these mandates do not have to take into account the residual harm that still occurs. These actors end up bearing only a fraction of the social cost of their activity. The same is true when the government regulates safety through ex post liability using the negligence rule. Actors comply with the negligence standards and face no additional liability, although additional harm may occur. The advantage of insurance is in converting the expected harm into an ex ante fee—the insurance premium. In this way, the insurance premium works like a pure Pigouvian tax, paid upfront and roughly equal to the externality. Risk-differentiated premiums cause parties to pay the expected external cost of their activity, which in turn shape their levels of activity.

In principle, the government can also charge actors for engaging in their activity, but in practice this is rarely done (and when it is done, the rates charged are uniform and do not reflect actors' idiosyncratic risk). If the government attempts to price externalities ex ante, it must rely on thinner data, compared with the data available to

insurers. And since the government will not be providing insurance coverage, it does not have the incentive to accurately price each actor according to the expect harm its activity entails. Insurers, on the other hand, have to set individually accurate premiums or else they would suffer a loss of profit or be competed away. As a result, they effectively implement one of the most efficient forms of regulation – tailored Pigouvian taxes.

Finally, insurers outperform the government as regulator of safety by implementing safety codes that *exceed* the government-regulated "floor." For example, environmental regulations set standards safety, but environmental liability insurers increase these standards by requiring all policyholders to comply with stricter codes, that are written by private environmental groups. Insurers promote participation in private Environmental Management Systems that follow strict codes of environmental compliance.[35] Insurers do this not because they care about the environment, but because of competition. When the government is under-regulating safety due to political constraints, insurers can step in and increase the standards, which overall will save money for their clients. For example, the government may not do enough to address future harms due to climate change, flooding, and land erosion. But through correct pricing of risk, property insurers can indirectly affect their policyholders' decisions where to build and how to safeguard buildings against floods and other severe weather risks. Unlike government regulators, private insurers are not affected by political debates over the science that underlies climate-change policy. They must act efficiently, or lose money.

In this comparison, the advantage that insurers have is due to superior information and superior incentives. Both government agencies and insurers gather and use much information in regulating safety. The more fine the information about particular actors' risk, the more efficient are the levels of safety that can be tailored to each actor. Sometimes the government will have better data, because it can use sovereign powers to compel reporting. But other times insurance can utilize the

35. See How to Open Pollution Coverage Market—Make Policy Contingent on Obeying Environmental Code, **Ins. Advocate**, Apr. 5, 1997, at 10; Kunzman, supra __, at 477.

industry's technology of data collection, data sharing, and data analysis to reach more accurate predictions of risk and deploy it in its regulation of safety.

### II. Regulation of Food Safety By Insurance

In any area of risky human activity, insurance may step in as a regulator of safety only if the risks arising from this activity are insured. What insurance is available for harms from unsafe food?

One possible form of insurance is first party health and life insurance. Since unsafe food causes illness to consumers, they may carry insurance to cover these losses. Health insurers ordinarily cover any type of illness, and life insurers cover fatality risk. First party insurers, however, are poor regulators of food safety risk. First, there is little that consumers can do to safeguard from contaminated foods, and so even if they were insured there is no much conduct regulation that can be accomplished.[36] Second, even if insurers could regulate policyholders' exposure, foodborne illness would be low on the health insurers' list of risks to regulate, given the many other sources of health risks (like smoking and poor diet). First party insurers are unable to distinguish and charge lower premiums to consumers who purchase relatively safe food. They cannot monitor the food their policyholders eat and are unlikely to deny coverage for eating poorly prepared dishes. In general, the problem in food safety is not due to careless consumers. Regulation of food safety risk should not be aimed at the behavior of consumers, and therefore it cannot be done by their insurers.

Since the problem of food safety is due to the behavior of firms—processors and distributors of food—the solution should come from the liability insurers of these actors. Liability insurers may act as regulators—and do so successfully in other dangerous products areas—but only to the extent that the law places liability on parties who cause foodborne illnesses, and these parties purchase insurance. Put simply, if the law imposes products liability on firms that cause food to be unsafe, demand for liability insurance would emerge from these parties, and an insurance-based regulatory regime may

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36. See Hanson & Logue, supra note **Error! Bookmark not defined.**, at 145–53.

emerge. It is a public-private partnership in regulation: the law uses ex-post regulation, primarily through tort law; potential injurers buy liability insurance; and liability insurers deploy their tools of ex ante regulation. Let's examine each one of these elements of food safety regulation by insurance.

Tort Liability

The first and crucial element in this scheme is a system of tort liability for food-related injuries. At first blush, this is a standard liability/warranty regime. Under products liability law, manufacturers of defective and injurious products are liable for the harm their products caused. Under product warranty law, sellers of goods are required to make their clients whole. Both the torts branch (products liability) and the contracts branch (warranty) usually prohibit waiver or disclaimer of these forms of liability for bodily injuries.

Unlike other products, however, foodborne injuries present a special challenge, due to uncertainty over causation. First, it might be difficult to identify the particular food product that caused illness. People consume food from many sources, and symptoms of food poisoning may be latent or a result of comingled factors. This problem is largely overcome, however, when the illness is an epidemic, afflicting multiple consumers, or when it is severe. In these contexts, post-injury inquiries are more likely to identify the causes of the harm and assign liability accurately.

Second, even if the blameworthy product is identified, it might be difficult to identify where, along the chain of production and distribution, the contamination occurred. Was it due to acts of the grower of the crops or the livestock? Or the acts of one of the many parties that processed the raw ingredients into the food product? The wholesaler or retailer? The restaurant or household that prepared the dish? Even if it is known that the consumer was injured by, for example, salmonella in the pork product, it could be difficult to ascertain which party mishandled the food.

While this uncertainty about the culpable link can sometime be resolved by ex-post investigation, it often costly and infeasible. Information that was available to inspectors before the contamination occurred, had they visited the plants to inspect

them, may be stale or hidden after the breakout. Any system of products liability law cannot alone deal with the problem of small manufacturers, retailers, and importers of tainted food.[37] Many of them are judgment proof, geographically remote, or anonymous. The may be located in other countries. Their inputs may have been blended into multi-source lots and can no longer be physically identified. Small food suppliers do not have brand names to post as reputation bonds.

Indeed, this information problem may be regarded as a rationale for using ex ante, instead of ex-post regulation. If you can't deter them, the only remaining strategy is inspect them and control their conduct before harm occurs. But this rationale for inspection-based regulation is misguided. While it is often indeed hard to look back and identify the responsible link, there is nevertheless an enforcement cost advantage to ex-post liability over ex ante command-and-control regulation. Ex-post liability is superior because the information about a violation has to be obtained only when harm occurs. Compliance with ex ante regulation has to be verified independently of the occurrence of harm, whereas post-harm evaluation of liability has to be done only in the small fraction of harm cases.[38] Since the great majority of food is not tainted, there is no need to inspect it, and the monitoring resources that are greatly saved can be directed for the ex post inquiry when necessary. Unless it is utterly impossible to identify causation ex post, enforcement is more efficient if done ex post.

Can courts identify where along the chain of distribution fault lies? Is there enough information to implement a tort regime for food injuries? There are several reasons to think that the information problem is manageable. First, for compensation purposes, notice that the same problem of fault-verification arises in administering compensation funds outside of tort law. In China, the government required companies who caused food injuries to pay into a compensation fund from which victims can recover, and this mechanism has gained popularity, even though its success is still

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[37] Jean C. Buzby et al., Food & Rural Econ. Div., U.S. Dep't of Agric., Agric. Econ. Rep. No. 799, Product Liability and Microbial Foodborne Illness 9 (2001), available at http://www.ers.usda.gov/publications/aer799/aer799.pdf.

[38] Steven Shavell, *A Fundamental Enforcement Cost Advantage of the Negligence Rule over Regulation*, 42 J. Legal Stud. 275 (2013).

questionable.[39] Second, for deterrence purposes, it is not necessary to identify fault in every injury case. Detection uncertainty can be offset by punitive damages. If, for example, only one third of harms are compensated, the damages measure should be multiplied by a factor of three to create proper incentives.[40]

In designing an effective tort system for food injuries, it is important that injured consumers will not need to prove causation in order to recover. If they do, the success of such suits would be greatly undermined.[41] The key, instead, is to have a simple rule of recovery, and it has to be directed against a major party in the chain of distribution.

One such approach can come from warranty law: liability would be placed on the party with whom the injured consumer had a contractual relationship. For example, for food that is purchased in grocery stores, liability could be placed on the retailer, even if the contamination occurred earlier in the chain of distribution. Similarly, if food were consumed in a restaurant, liability would be placed on the restaurant. Another solution is to place tort liability on an intermediary such as a large wholesaler, importer, or major processing plant. If the food were likely to have been contaminated early in the chain of production, strict liability on one of these intermediaries would mean that recovery would be available to the victims, even if the harm was due to the negligent act of some other party upstream in the chain of distribution. As we will see below, through insurance, the proper safety incentives could trickle through to all parties.

Compulsory Insurance

The second crucial element in the insurance-as-regulation scheme is a legal mandate to purchase liability insurance, imposed upon the parties who are liable under the tort/warranty regime. If retailers are the liable parties, they have to purchase insurance to cover their liability, and similarly for restaurants, importers, or major food processing intermediaries.

As in other areas of products liability, parties who face the risk of liability from the tort system often have the incentive purchase liability coverage from insurers who

[39] Balzano, at 59.
[40] A. Mitchell Polinsky and Steven Shavell, Punitive Damages: An Economic Analysis.
[41]

develop special expertise in regulating the risks in question. But not all do so. Some potential injurers may be reluctant to purchase insurance, perhaps because they are judgment proof and do not care to spend the cost of insurance premiums, or perhaps because they cannot afford the cost of the insurance premium. For this reason, the law must include one important ex-ante requirement: the purchase of insurance ought to be mandatory, and the law should regulate the minimum amount of coverage that entities have to purchase. For example, a large supermarket would have to purchase liability insurance coverage limits that are greater than a smaller scale restaurant.

Indeed, a requirement of compulsory liability insurance can be placed over the entire chain of distribution, requiring even small sellers of food products to purchase enough liability insurance to cover them against the risk of food-borne illness that may arise from their scale of activity. But such web of insurance would be difficult to administer and would be unnecessary to reach the goals of food safety. It is crucial, instead, that a liability insurance mandate be directed against the main links in the food distribution chain, those who are most likely to be identified (and sued) by injured consumers. It is not the small dairy farmer who produced the milk at his farm that will be sued; rather it is the regional milk processing plant, or—as proposed here—the retailer, who would be targeted by liability suits and who should purchase enough insurance to cover such liability.

Indeed, since 2014 the Shanghai authorities have instituted compulsory food safety insurance, applying only to the major links in the food chain: "Those affected by compulsory insurance are major food enterprises producing dairy products, infant food and edible oil; big food wholesalers; large supermarkets, businesses involved in big wedding banquets and institutional food services "[42] Hubei Province has also issued the Implementing Plan for the Pilot Program of Hubei Food Safety Liability Insurance recently, which involves restaurants and institutional caterers such as school canteens,

[42] Chi-Han Ai, *Compulsory food safety liability insurance to be launched in Shanghai*, UrbaChina, (February 24, 2014), available at http://urbachina.hypotheses.org/8874 (last visit Nov 8, 2014) See also Qi Yifan: *Shanghai to Carry Out Food Safety Liability Insurance (上海推广食品安全责任险)*, People's Daily (Feb 24, 2014 10:19 AM) available at http://www.zj.xinhuanet.com/sszg/2014-02/24/c_119467300.htm (last visit Nov 8, 2014)

manufacturers of food additives, dairy products, meat, frozen foods, and alcohol, food wholesalers, and supermarkets.[43]

Guangdong, Sichuan, and several other localities in China have also explored the pilot program in instituting food safety liability insurance.[44] But overall, the programs remain at an initial phase and need a mandate from the national legislation.[45] China's top legislature has proposed in a new draft Food Safety Law (Draft for Public Comments) to add an article on encouraging the establishment of food safety liability insurance system and support those enterprises that choose to be insured. [46] It is anticipated that the Chinese government may start to mandate food safety liability insurance in certain high-risk food areas such as dairy and meat products.[47]

Thus, the regulation-by-insurance regime relies on two important elements supplied by law. The first is an effective scheme of ex post recovery for injured consumers. The second is an ex ante mandate to purchase liability insurance. With these two components of public regulation in place—strict liability on major suppliers and mandatory purchase of insurance sufficient to cover a reasonable amount of risk—the stage would be set for private ex ante regulation by insurers.

Ex ante Regulation By Insurance

[43] Chen Yu (陈屿): *Pilot Work On Food Safety Liability Insurance in Hubei Province(湖北省食品安全责任保险试点工作)*available at http://www.gov.cn/xinwen/2014-10/10/content_2762001.htm (last visit Nov 3, 2014)

[44] Li Tangning (李唐宁): *Compulsory Food Safety Liability Insurance to Be Legislated; Guiding Opinions on Pilot Work Is About to Release(食品安全强制保险将立法，试点工作指导意见即将出台)* Economic Information Daily, (September 10, 2014 09: 49 AM) available at http://news.xinhuanet.com/fortune/2014-09/01/c_126940070.htm (last visit Nov 3, 2014)

[45] *More than 30 Domestic Food Safety Liability Insurance; Experts Say It Should Be Mandated(国内食品安全责任险超 30 款 专家称应立强制保险制度)* Economic Information (February 7, 2014) available at http://dz.jjckb.cn/www/pages/webpage2009/html/2014-02/07/content_85922.htm?div=-1 (last visit Nov. 7, 2014)

[46] Food Safety Law of the People's Republic of China (Amended) (Draft for Public Comments) (Standing Committee of National People's Congress, June 30, 2014), Art. 78

[47] Xu Wei: *Liability insurance proposed for food industries,* China Daily (July 3, 2014, 07:02 AM) available at http://www.chinadaily.com.cn/china/2014-07/03/content_17638955.htm (last visited Nov 7, 2014)

We now arrived at the core claim of this paper: Insurers may operate as ex ante regulators of food safety, helping their clients manage the liability exposure by inducing the use of cost-effective safety measures.

This regulation would be done through contract. Insurers would use the insurance policy and their underwriting criteria to generate incentives for specific precautions. The minimum policy limits that clients are required to maintain would be set by the government, but it would be up to each insurer to price the coverage according to the idiosyncratic risk that each client poses, which would importantly depend on the level of safety that each client adopts.

It is here that the information advantage of insurers could provide a unique advantage in setting safety standards. To qualify for discounted premiums, policyholder would have to provide proof that they meet insurance guidelines for risk reduction. The process of underwriting policies would depend information that the insurance industry has regarding the best prevention methods. Underwriting would also harness the expertise of intermediaries—local inspectors and certifiers, trade associations, distribution networks—that are otherwise not used when it is the government that inspects food.[48]

More specifically, what would this regulation by insurance entail?

*Entry.* First, insurers would become de facto regulators of entry into the food business. The requirement that food distributors buy insurance means that they cannot operate legally unless an insurer is willing to underwrite their risk. Refusal to insure would bar entry, and insurers would effectively assume the role of business licensors. In addition, insurers may condition coverage on their client restricting its supply sources and purchasing food inputs only from reputable, inspected, and separately insured suppliers. Such conditions would affect entry into the suppliers' line of business. If a supplier wants to sell eggs to a supermarket, it would have to comply with the

[48.] As Baker points out in his proposal for warranty bonds, the insurance industry is experienced in underwriting similar kinds of health and safety risks related to global food supply. Many existing importers voluntarily purchase liability insurance that covers product liability risk and product recall costs, as well as the costs of business interruption.

supermarket insurer's conditions, or else go out of business, and one of these conditions may be the purchase of separate insurance policy by the eggs supplier (which would, in turn, usher in another insurer with its own safety risk-reduction standards) .

*Risk Rating.* Second, and most importantly, using the risk-based pricing tools discussed above (feature rating and experience rating), insurers can require specific risk-reduction measures. For example, insurers may offer premium discounts to firms that keep detailed records of their sources of supply, which would simplify any post-injury inquiry, and, if contamination occurs, allow insurers to deploy their subrogation rights against parties responsible for it. Similarly, insurers could employ experts and trusted inspectors to visit the facilities of their policyholders, identify food risks in advance (how old are the refrigeration units? How often are they cleaned?) and adjust premium prices accordingly. As mentioned before, insurers may induce their policyholders to purchase supplies from certified or insured sources. They can also require that the client train specially designated employees to tasks of overseeing safety procedures.

As with any type of insurance, premium discounts would be offered when firms can demonstrate proper practices that are in place to make food safer. Insurers can rely on existing standards and require their clients to reach these standards to enjoy premium discounts. For example, the International Organization for Standardization (ISO) developed elaborate standards for food safety management, "applicable to all organizations, regardless of size, which are involved in any aspect of the food chain and want to implement systems that consistently provide safe products."[49] Similarly, the Safe Quality Food Institute developed a standard ("SQF 2000").[50] Other standards are already utilized in underwriting restaurant insurance, for example against the risk of fire.[51]

In addition, in the U.S. various professional societies perform the optional service on-site audits, focusing on quality and management of the plants (e.g., The American

[49] See *ISO 22000 - Food safety management*, http://www.iso.org/iso/home/standards/management-standards/iso22000.htm?archive=all.

[50] http://www.sqfi.com/wp-content/uploads/2000-Guidance-FoodPack.pdf

[51] See, e.g., restaurant insurance application by Hanover Insurance, at http://www.hanover.com/linec/docs/RestaurantSuppApp.pdf, which incorporate the UL300 kitchen fire safety standard (http://ulstandardsinfonet.ul.com/scopes/scopes.asp?fn=0300.html).

Meat Institute[52] and the American Institute of Baking.[53]) These audits also cover food safety. Thus, as they do in selling environmental liability insurance policies, insurers can rely on such private standards and private audits administered by other professional groups. Or, as they do in the auto safety context, where insurers have developed reputable safety ratings,[54] food liability insurers can develop their own standards and their own set of protocols for safety certification, and conduct the audits with their own trained underwriters.

The gist of this approach is that it opens the door for safety solutions written by individual insurers, each applying its own underwriting methods. Different insurers may emphasize different safety factors, but the common theme is discount-per-safety. The more stringent the private standard that the client satisfies, or the more reliable the private auditor or laboratory hired to do safety inspections or food testing at the client's facility, the greater the discount that this client would receive. A client who is audited more frequently, in more sites, and who requires its suppliers to do the same, would benefit by enjoying a lower premium. The same incentive would apply through loss history rating, since insurers insist that clients report all incidents of contamination in any insurance application (and can deny coverage ex post if false reporting occurred).

*Recalls.* Another way in which insurers can regulate food safety is through ex post mitigation. Insurers that cover food products liability would supervise food recalls, to mitigate the harm after tainted foods were already distributed. As noted by others, this type of insurance protection already exists in the food industry.[55] It require firms to have detailed recall plans, or to conform with the instructions of their insurers. Recall insurance would give incentives for firm to go above government required minimum

[52] See, e.g., http://www.meatami.com/ht/d/sp/i/220/pid/220 ; http://www.animalhandling.org/ht/d/sp/i/26752/pid/26752

[53] http://www.aibonline.org/aibOnline_/GenericForm.aspx?strOpen=\www.aibonline.org/auditservices/index.html

[54] http://www.iihs.org/iihs/ratings

[55] Jerry R. Skees et al., *The Potential for Recall Insurance to Improve Food Safety*, 4 International Food and Agribusiness Management Review 99 (2001).

standards, because the satisfaction of higher standards would entitle them to premium discounts and avoid future rate increases (experience rating).

Conclusion

I argued that compulsory food liability insurance is an important way in which regulation of food safety can be improved and obtain better results. Insurers can do what the government is trying to accomplish – rate the safety of food establishments and attach prices that reflect these safety ratings. High insurance prices can work to deter unsafe practices.

An obvious but misguided objection to compulsory liability insurance is that it would raise the cost of food production and raise prices to consumers.[56] The only reason uninsured food may be cheaper is the failure of wrongdoers to pay damages. Uninsured food may cost less in nominal price, but costs more in injury and uncompensated loss. As long as tort liability is rationally allocated—requiring manufacturers to take cost justified care—compulsory insurance would remove the implicit price that consumers pay in the form of uncompensated harm, and thus make products overall more, rather than less, affordable.

Finally, it should be noted that voluntary insurance would *not* lead to the same benefits as compulsory insurance. It is possible that firms choosing not to insure would have internal incentives to self-regulate. Large supermarket chains, for example, could act as self-insurers and still have sufficient incentive to maintain appropriate standards of safety. But as hazards an occur anywhere along the chain of production and distribution of food, the regulatory scheme of insurance needs to scoop in actors that might otherwise choose not to insure.

[56] Xu Wei, *Liability insurance proposed for food industries*, China Daily (July 3, 2014, 07:02 AM) available at http://www.chinadaily.com.cn/china/2014-07/03/content_17638955.htm (last visited Nov 7, 2014)