



Emerging Risks in the Global Insurance Industry

**Evolving Insurance Risk and Regulation
Preparing for the future - Chapter 5**

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Introduction

As more regulatory regimes around the world develop risk-based structure, the role of risk managers becomes increasingly important. One of the most challenging areas for risk managers, insurers and regulators alike is identifying and assessing emerging risks that may affect the industry. This is by no means a science. It requires monitoring of global developments and thinking the unimaginable. Even when the risk has been identified, its impact can be difficult to quantify, yet it may be significant.

The changing risk landscape includes new environmental, technological, geo-political, economic and legal developments, as well as the growing interdependencies among them. The more that risks are evaluated and understood, the better a business can respond. Some examples affecting the insurance industry are obvious (for example, climate change) and others can arise from developments in other sectors (such as autonomous vehicles). Some may appear suddenly (such as the emergence of the Zika virus), while others may slowly evolve over time (for example, the impact of robotics on employment levels).

The list is large and continually growing; in this chapter we have outlined some of the key emerging risks for the insurance sector, which all insurers and regulators should be considering.

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Environmental risks

Climate change

General consensus now exists that the climate is changing. Insurers need to consider their response to related risks and be ready for the challenge of large, climate related global losses.

During December 2015, world leaders met in Paris to sign an agreement that builds a framework for monitoring and reporting of initiatives to reduce carbon emissions. Nearly 200 countries agreed on the necessity of taking proactive efforts to curb emissions. At the time of writing, 177 countries have already signed up to the Paris Agreement, which



will remain open for signature until 22 April 2017. The three main objectives of the agreement are to reduce carbon emissions, adapt to a changing climate (which includes creating solutions for the management of loss and damage) and agreeing new commitments to financing the process. The agreement demonstrates increasing international focus on mitigating the effects of climate change.

In September 2015, the UK insurance regulator issued a paper on the impacts of climate change on the UK insurance industry¹. The messages in this report are not unique to the UK and can also be read across to insurers in other geographical areas.

The report concludes that insurers are exposed to risks emanating from climate change in three main areas:

- **Physical risks:** risks that arise from weather-related events, such as floods and storms, both directly and indirectly through subsequent events, such as disruption of global supply chains or resource scarcity
- **Liability risks:** risks that could arise from third party claims (for example, under professional indemnity contracts) where claims are successfully brought by third parties against the insured party for losses or damage suffered from climate change, with some or all of the cost being passed onto the insured's insurance company
- **Transition or economic risks:** financial risks which could arise from the transition to a lower-carbon economy. For example, the potential re-pricing of carbon-intensive assets and the speed at which any such re-pricing might occur. To a lesser extent, insurers may also need to adapt to reductions in insurance premiums within carbon-intensive sectors.

Insurers have deep experience in mitigating risks associated with natural catastrophes. The climate change challenge requires a variety of responses from the industry and many insurers are already engaged in risk mitigation initiatives. For example, insurers are not only increasing their own understanding of climate change impacts and preparing for these, but are also:

- helping clients to identify how potential damage can be limited (for example through different land use, stronger building codes and better planning) and helping them focus on risk management related to climate change
- assessing the potential impact of climate change on their portfolios of both insurance contracts and investment portfolios, in addition to devising new risk mitigation instruments for clients.

As clean, renewable energy becomes more prevalent, insurers are also assessing the potential reputational damage that could arise from being a major investor in carbon related assets and considering if and when to divest of such assets. Insurers also are considering how to address the potential impact of climate change on water pollution and food scarcity.

Generally, the insurance industry appears to have a good understanding of the impacts that climate change could have on the cost of insurance coverage and future solvency. Insurers are evaluating climate related factors, reviewing where they may have significant liability and considering how to estimate their exposures. Insurance regulators are also increasingly including an assessment of climate change risk factors within existing supervisory frameworks, including the potential impact on business model sustainability.

Fracking

Hydraulic fracturing, or fracking, as it is better known, is a technology that has been used for many years to extract natural gas or oil from underground wells, typically from unconventional energy reservoirs. The process fires a fluid into underground rock in order to create fractures and release the gas or oil contained within.

The practice has come under increased scrutiny in recent years. Three main risks have been identified:

- chemicals in the fluid can cause ground water contamination
- the after-effects from poor handling of the waste fluid
- the potential for increased seismic activity from the process, even in countries that have no prior history of natural earthquakes.

The risk from seismic activity is larger in countries that do not regularly experience earthquakes and these countries will have little awareness of, or insurance against, such events. In the US, Oklahoma is one such area, having experienced 907 magnitude 3+ earthquakes in 2015,² significantly up from prior years (2014 - 585, 2013 - 109). The Oklahoma Office of the Secretary of Energy and Environment website includes a number of academic research papers on fracking. It states that *"The Oklahoma Geological Survey has determined that the majority of recent earthquakes in central and north-central Oklahoma are very likely triggered by the injection of produced water in disposal wells."*

Levels of regulation and public acceptance of fracking vary around the world, however its use is growing. For example, recent approval has been granted for fracking to commence in three counties in the north of England.

The liability claims from fracking could be extremely large and have repercussions that spread far down the supply chain. Well operators and drilling contractors may be exposed to environmental and public liability claims, while product liability claims may fall throughout the fracking chemical production chain.

"The liability claims from fracking could be extremely large and have repercussions that spread far down the supply chain. Well operators and drilling contractors may be exposed to environmental and public liability claims..."



Technological risks

Whilst it is true that insurers often suffer from legacy policy administration and other old IT systems, significant innovation is also underway to meet changing risk profiles. For example, the use of telematics in car insurance delivers more personalized underwriting experiences and opportunities. Four key risks and opportunities merit special attention this year: cyber-risk, nanotechnology, light-emitting diodes, and autonomous vehicles.

Cyber-risk

The risk of cyber-crime is relevant to all businesses. The focus for insurers is to understand how cyber-risks can lead to losses for both their clients and themselves. This is not a new risk, but it remains difficult to underwrite as the impact of a cyber-attack can vary dramatically, depending on how malicious the attack is and the speed with which it is identified and rectified by the target company.

Insurers must also ensure that their own confidential and policyholder information is protected. Insurers hold significant amounts of personal data. They are therefore at risk of serious reputational and financial damage should they suffer a cyber-attack. Failures in cybersecurity have the potential to impact operations, core processes, and reputation. They can also undermine the public's confidence in the financial services industry as a whole.

In April 2016, the International Association of Insurance Supervisors (IAIS) issued for consultation an *Issues Paper on Cyber Risk to the Insurance Sector*.³ It aims to raise awareness of the challenges presented by cyber-risk, including supervisory approaches for addressing this. The paper provided supervisors and insurers with examples of risks and discusses supervisory practices and challenges.

A corollary to cyber-risk is data management risk. Consider the following two examples from Swiss Re's 2016 SONAR report:⁴

- **Phony data:** that is, incorrect big data. With so much data available, but not all of it able to be sensibly codified, some data submissions may be open to policyholder manipulation (for example, from wearable technology). The rise of big data in pricing policies leads to a greater risk of policies that have not been valued correctly, creating further potential for increased insurance fraud and a lack of understanding of likely future claims.
- **Precision Medicine:** this is a customized model of healthcare that uses specific genetic and lifestyle information about a person to create personalized treatment plans. This approach may increase short term health costs, but in the long term it is expected to reduce health insurance expenditure. However, the management and transfer of this data creates avenues for future large liability issues as the amount of data needed to create a customized personal model is enormous. This amount of data is likely to be cloud-based, thus creating concerns about confidentiality and privacy, and therefore increased liability. Potential dangers also arise merely from the existence of personalized data repositories, particularly in the life insurance industry segment which is at risk of anti-selection challenges.

Cyber also offers significant business opportunities. Insurers are seeing an increasing demand for cyber insurance products, covering losses relating to attacks on the company and loss of personally identifiable information. Currently, the vast majority of this cover is offered in the USA, but coverage is expanding geographically. Typical

coverage includes both direct losses associated with the cost of business interruption (while systems are taken offline) and indirect costs (such as recompense paid to the client's customers and costs of investigation). Policies may also include the provision of assistance to help manage the incident.

Nanotechnology

Nanotechnology is a relatively new area of science that relies on particles built on the atomic scale ("nanoparticles") that are embedded in physical items. It is used in a wide variety of areas, including medicine, electronics, food safety, and sporting equipment.

At the atomic level, the characteristics of particles are altered significantly. For example, they can become stronger, more reactive, or more conductive. However, the long term effect of these qualities, and of their toxicity, is not yet known.

Nanoparticles can easily be inhaled, absorbed through the skin or ingested. It is possible they could accumulate to form larger particles once inside the body. Even if the nanoparticles are themselves harmless, the possibility exists that their small size could mask or support other toxic particles overcoming the body's natural defenses. Insurers should consider the terms and conditions of any health coverage in light of this risk, taking on the lessons learned from asbestos liabilities.

Nanoparticles may also create environmental risks transmitted through the food chain, as occurred with DDT (dichlorodiphenyltrichloroethane) pesticides.

In general, the insurance industry tends to have robust exclusions in place to limit losses of this nature. However, the potential for

large pollution losses does exist if the risks identified above were to manifest themselves. Insurers that write business in classes such as employers' liability, product liability, environmental liability or directors' and officers' liability will need to be proactive in monitoring developments regarding this emerging technology.

Light emitting diodes (LEDs)

LED lights are now found in abundance throughout the average household and office. They are used in room lighting, technology (such as phone, laptop and television screens), and traffic signals. Compared to traditional lighting, they are more energy efficient and have a longer life span. The cost has also fallen over the last few years and market share is increasing rapidly.

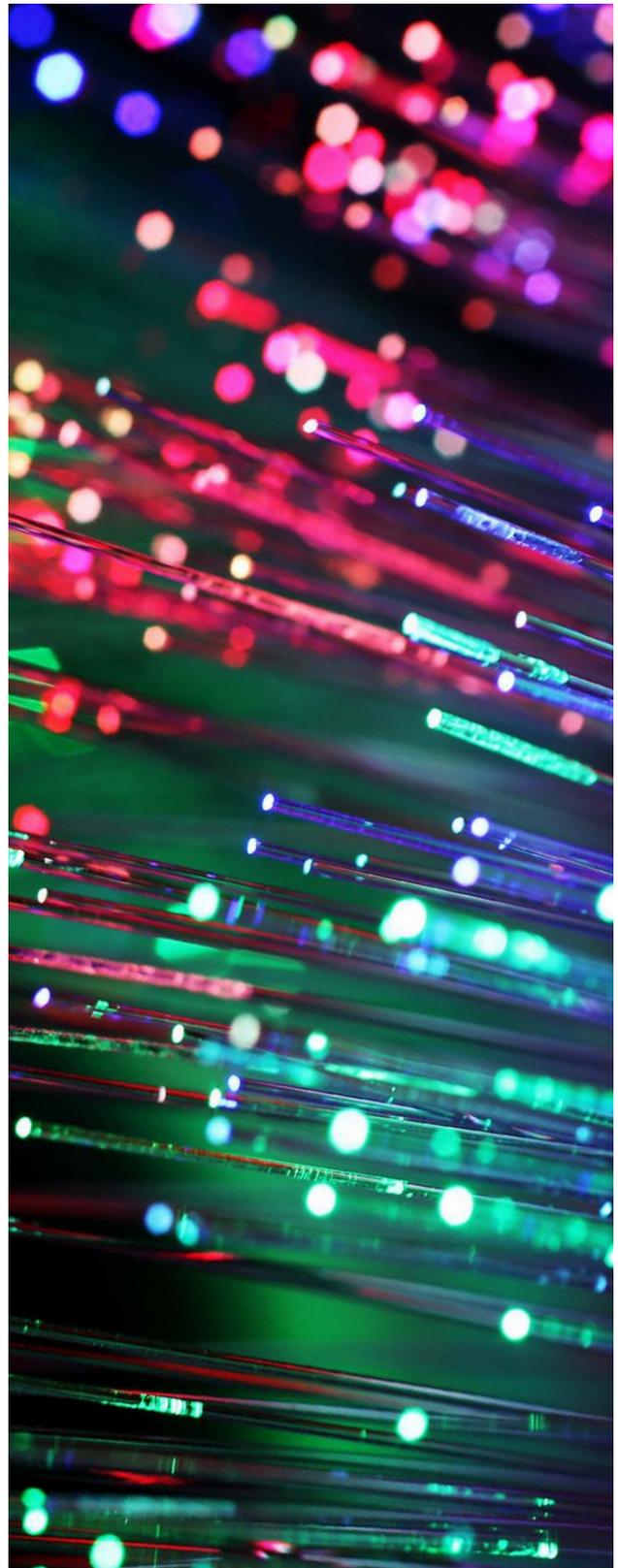
Given the increasing dependency on technology for our lives, work and hobbies, including the significant increase in children's use of technology, we are more exposed to LED light than ever before. Smartphones in particular are held close to the face and utilized by looking directly into the light. If LED use is discovered to generate adverse health effects, the potential for bodily injury claims could be high.

Two main risks could arise from LED usage:

- **Sleep disruption:** LEDs emit a blue light which may affect melatonin production and circadian rhythms in the human body. These in turn can lead to sleep disruption and corresponding health problems.
- **Retina damage:** The risk exists that the blue light emitted by LEDs could damage the retina. This is particularly risky for children as their eyes are not yet fully developed. LEDs are typically covered with a coating of phosphor which converts the blue light to white. However, over time this coating may wear down, meaning that the longer a product is used the more the risk increases.

Currently, there is no widespread move by manufacturers or product developers to minimize these risks.

In the future, if this risk manifests itself, insurers could face challenges similar to those that arose with asbestos, namely in defining when an injury is deemed to have occurred, and what product in particular can be attached to that injury.



Autonomous vehicles

Autonomous vehicles are becoming more commonplace. Drones are now available to civilians, as are driverless trains, such as one line on the London transport network. The game changer will be driverless cars.

Cars (and other road vehicles) already have some autonomous elements: autonomous emergency braking (AEB), airbags, parking controls, and GPS routing. However, the move to a completely autonomous car will be a long process. Even with the right legislation and public support, fully autonomous cars could become a reality in under ten years.⁵ Trials of semi-autonomous cars (which can technically drive themselves, but need supervision by a human driver) are already underway in many countries across the world.

This technology will require significant changes for the auto insurance industry's framework for allocating liability for accidents. As cars become more autonomous, the personal motor insurance sector will likely diminish with manufacturers' product liability increasing. A move to manufacturer liability will introduce a high level of aggregation risk for motor insurance (for example in events such as a product fault present in a fleet of manufacturer's cars).

Beyond the accident insurance context, vehicle automation creates a new class of cyber-risk for companies and their insurers immediately. The new generation of automobiles already collects and stores significant amounts of personal data from individuals. Geo-location data from navigation systems, driver behavior patterns (including monitoring whether speed limits are being honored by the driver), and integration with cell phones provide insurers with the opportunity to generate more personalized insurance products that

reward responsible behavior. Some of these products are provided by third parties, complicating further the potential liability context in the event of an accident. They also generate new classes of potential liability if the database containing the driving habits information has been hacked.

Any such transition towards full vehicle automation will be gradual. Over the short to medium term, insurers will likely face a hybrid market dominated by three overlapping areas of risk mitigation demand: traditional personal accident insurance, product liability insurance coverage and business interruption insurance needed to cover potential breaches of personal data repositories held by insurance companies.

A gradual shift will provide time for the public to build trust in the vehicles (both in terms of their personal health and data safety) and for the motor industry to produce more autonomous and less "traditional" vehicles. Strong consumer demand and the ability of manufacturers to meet that demand quickly cannot accelerate the shift towards fully autonomous vehicles. These vehicles require significant infrastructure changes in order for the vehicles to navigate properly. This, in turn, requires legislation authorizing infrastructure funding followed by construction projects. In addition, traffic safety laws may need to be updated to address a wider range of situations that can arise when the road is shared by autonomous vehicles and human drivers. Technology enthusiasts and the auto sector may seek legislative change to eliminate no-fault insurance in order to increase public support for autonomous vehicles.

Even when cars are fully automated, if these systems fail in any way, there will be a question as to how much, if any, responsibility will be allocated to the human

passenger. Additional questions will arise regarding the appropriate liability framework between car manufacturers, ride-sharing technology companies that help connect cars with passengers, and passengers themselves. At present, automobile accident insurance centers on the driver who often is the owner of the car. The high cost of autonomous vehicles means that, at least initially, the majority of traffic using these vehicles will not be owned by the public, but more likely owned by car manufacturers and leased by ride-sharing services.

When an accident occurs, the first question will be to determine who was operating the vehicle. Three options exist: was it the car company that owns the vehicle, the ride-sharing company that arranged the transit (and thus planned the route) or any possible third party that actually operated the navigation system? Notions of contributory negligence will also have to be expanded to include possibilities that passenger behavior interfered with the car's controls.

Autonomous cars will have further macro impacts on the industry. The biggest societal advance of this technology is expected to be a reduction in car accidents, which would mean a predicted reduction in claim costs, everything else being equal. However, there are also strong links to cyber-risks and terrorism (discussed elsewhere in this chapter), both in terms of potential hacking of the personal data collected by the systems and the potential to override the systems themselves, gaining control of the car and putting personal safety at risk. In the short-term, accidents could also increase due to the mix of human and computer drivers on the roads. Insurers will be wise to keep these interlinking risks in mind as this technology becomes more commonplace.



“As cars become more autonomous, the personal motor insurance sector will likely diminish with manufacturers’ product liability increasing. A move to manufacturer liability will introduce a high level of aggregation risk for motor insurance.”

Geo-political risks

Terrorism

Terrorism is not a new phenomenon. But a range of new developments continue to evolve and expand the mechanisms by which terrorism operates. These include: increased use of social media as a recruiting and marketing tool combined with increased access to social media and other mobile communications, intensifying regional conflicts, expanded state use of cyber-warfare, and a redistribution of geo-economic power among large states. Consequently, we continue to consider terrorism as an emerging risk.

Since the attacks of September 11, 2001 in New York and Washington DC, counter-terrorism activities globally have grown and strengthened. Attacks on that scale have so far not been repeated. However, there has been a growing number of more low key and unsophisticated attacks that are harder to detect, where so-called

lone wolves act in the name of terrorist groups. More importantly, the frequency of these attacks has increased in the last year and the focus of the attacks has shifted to non-obvious or soft targets like nightclubs (Paris, Orlando), workplaces (Oregon), and secondary cities (Brussels, Ankara).

This change in terror attack style also requires a shift in insurance focus. While property damage claims on a large scale are expected to be less common, they remain important in general terms. However, business interruption and liability claims are becoming more of a focus. Where business interruption would be typically sold alongside property insurance, insurers are beginning to consider incorporating non-property damage into their terrorism packages.⁶ Small businesses that provide gathering places may also increasingly seek such insurance protection, particularly nightclubs.

Cybersecurity (discussed on page 6) is also susceptible to terror intervention. A successful large scale cyber-terrorism attack is currently seen as beyond the capability of known terror groups, however, this could change quickly and indeed is likely to do so as technology advances. State-sponsored hacking continues to generate concern years after the Estonian electricity and communications grid was compromised during a low level dispute with Russia. In addition, critical infrastructure, including nuclear plants, is increasingly being targeted by hackers not affiliated with terrorist groups with the intention of causing damage to products, businesses and people. The potential for loss of life exists, which amplifies the scope of insurance risks.



Rising pandemic risk

Pandemics have occurred throughout history, with recurrence rates averaging every 30 to 50 years.⁷ In the present day, the global population as a whole is healthier, with access to better medicine than in the past and entities such as the World Health Organisation playing a critical role in coordinating and communicating over borders on a global scale to manage dangerous outbreaks. However, various societal factors still point to the risk of a pandemic having the propensity to be worse than previously experienced. For example the increase in, and urbanization of, the global population, the low cost and speed of international travel for both goods and people, international migration and the threat of resistance to antibiotics all play their part. In advanced economies, the small but noticeable increase in the number of people declining available vaccinations could also increase the impact of manageable diseases.

Although the severity of an epidemic depends on a number of variables (including its nature, the medicine available to combat it and the ease with which it is transmitted), a global pandemic requires as a condition precedent an epidemic occurring in an urban or internationally connected location, enabling it to be easily spread. The two aspects are often linked and more likely to occur in developed countries. Contrast two recent epidemics:

- the Ebola epidemic in West Africa was largely contained due to the poor transportation connections between the region and the rest of the globe
- the ongoing Zika epidemic, which continues to spread because the carriers are not only individuals who travel, but also the disease carrying mosquitoes.

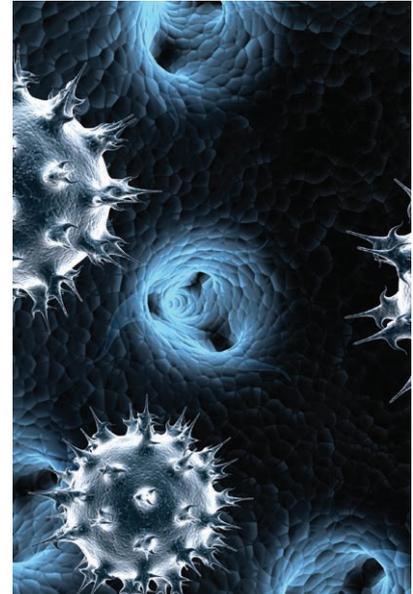
The Zika virus is primarily transmitted by mosquitoes infected with the virus. Other known transmission mechanisms include transmission from mother to child during pregnancy and intercourse. The virus results in birth defects, including microcephaly and other neurological disorders. It is now found in several countries, including US territories and the US mainland. The World Health Organisation declared a Public Health Emergency of International Concern on 1 February 2016 with regard to the virus.⁸

Higher life and health insurance coverage is typically found in developed countries, and medical care is often better. This means that, a global pandemic affecting developed countries will often mean significantly higher costs for insurers than for those occurring within developing countries. Notwithstanding this, developments in the sale of microinsurance and increased efforts within some developing countries to expand insurance coverage levels mean that the risk of pandemics will also impact insurers operating in these countries.

Insurers with high coverage in developed countries that assume the benefit of the higher standards of medical care should be aware that these conditions may still leave them ill-prepared for a pandemic outbreak.

A wider issue for the life and health insurance sector is how best to factor in fast-increasing medical advances. From a policyholder perspective, these lower the chance of death or prolonged illness. However, for insurers this increases the chance of a longer lifetime payout from an accident or illness that may have previously meant loss of life, resulting in a higher cost in aggregate.

Pandemics can also give rise to claims in the general insurance



sector. For example, we would expect to see general liability and professional liability lines of business as being at risk in the case of an outbreak due to misdiagnosis, and consequential employers' liability business at risk from medical staff who are not adequately protected from the outbreak.

Secondary losses have the potential to be large (for example business and supply chain interruption and event cancellation) and the quantum of claims could be increased as a result of by an overwhelmed infrastructure and an increased and aggregated demand for assistance.

The World Bank Group announced in May 2016⁹ that it will launch an insurance fund for pandemic risk to help poorer countries, defined as those eligible to borrow from its International Development Association. The Pandemic Emergency Facility (PEF) will take the form of a US\$500m fund to help fight new diseases such as Ebola. The PEF will combine funding from reinsurance markets with specially designed pandemic catastrophe bonds issued by the World Bank, thereby effectively creating the first insurance market for pandemic risk.

Economic risks

Employment in the automated age

With the creation of increasingly intelligent robotics, machine learning algorithms and a move further towards artificial intelligence, certain lines of work in the wider economy are becoming increasingly automated, with further shifts expected on the horizon.

Historically, the jobs at risk have been in the low skilled manual or service segment of the labor market. This includes both manufacturing and, more recently, supermarket checkouts. Increased automation was seen as a means of improving company efficiency and decreasing the risk of individuals being injured on the job, as robots are increasingly capable of undertaking a wider range of dangerous, repetitive or strenuous tasks.

It also provides individuals, in theory at least, the opportunity to seek more fulfilling employment. New jobs will be created for individuals, but these are most likely to be skilled positions needing science, technology, engineering, and math (STEM) skills as well as graphic design, computer engineering, and communications.

More recently, however, substantial research has identified the risk to higher skilled professions, as machine learning makes it possible for decisions to be taken in a fraction of the time taken by humans. Research by the Oxford University undertaken in 2013¹⁰ suggested that nearly half of all jobs in the United States were at risk of being automated in the next 20 years. In January 2016, Citi GPS estimated that OECD countries as a whole could see 57% of jobs at risk of automation. This is weighted towards less developed countries – for example the figure is 35% for the UK and 77% for China.¹¹ However, rapid structural shifts are not expected.

The 2016 Economic Report of the President¹² of the United States

indicates clearly that “while growing quickly, robotics are not poised to affect every area of the economy or replace human labor. Nonetheless, robotics still have the potential to be highly consequential for firms and, more broadly, for productivity.” The same report states that mass, rapid unemployment is “unlikely because several centuries of innovation have shown that, even as machines have been able to increasingly do tasks humans used to do, this leads humans to have higher incomes, consume more, and creates jobs for almost everyone who wants them.” It also found that non-routine problem solving jobs and jobs requiring “situational agility” in both the low-skilled and high-skilled segments of the labor market are now the least at risk for future robotic automation.

Even with a global push for upskilling society more generally, as robotics advances, more skilled jobs could become at risk. For example, machine learning algorithms have the technical capability to provide financial advice.¹³ Although the general population currently values the interaction with a human being in providing such advice, these “bots” (automated, continually operating, software products) expand the availability of sophisticated asset allocation strategies to segments of the wealth management market that previously might not have previously used a personal advisor. Bots can also be used for a broad range of repetitive information processing tasks. Big data and machine learning are already in use in the insurance sector to reduce claim approval times and its extension to other areas cannot be ignored.

This kind of shift in the labor market raises a range of challenging issues for insurers:

- if unemployment becomes widespread, the demand for personal insurance and employers’ liability insurance will slowly decrease

- certain lines of business such as creditor insurance could experience increasing claims activity
- increased automation will expand demand for cyber-related insurance
- increased automation will also expand demand for product liability insurance from robot manufacturers and business interruption insurance from companies using the robots
- high unemployment levels could lead to political and social unrest, potentially resulting in increased property damage claims, business interruption and fraudulent activity.

Extensive disruption, however, is a function of the speed of change. Labor unrest in countries with high unemployment levels in recent years has led to low-level property damage and high-value business interruptions due to strikes, particularly in France, Italy and Greece. Automation is not necessarily negative. Studies cited in the 2016 Economic Report of the President indicate that robotics have both increased annual GDP growth and improved labor productivity growth.

Gradual shifts in work/life balance could position societies for more gentle structural shifts in the way our economic and social contracts work. In addition, as automation expands the amount of time available for more cultural, creative and volunteering pursuits, they will raise potential new avenues within the insurance sector. For example:

- small businesses particularly could expand their demand for insurance coverage, particularly those involved in providing access and equipment in the high-adventure leisure sector.
- tourism companies could also seek increased and more innovative coverage as more individuals use their services.

More importantly, the nature of insurance coverage will change. Small companies will require sophisticated insurance coverage concerning their core IT platforms and the personal data stored on those platforms, particularly as they increase their use of bots to automate routine data processing tasks associated with the “on demand” or “gig” economy. Disruptive innovators in the transportation and accommodations segments of the tourism market will additionally require more sophisticated business interruption and liability coverage than traditional travel agents, since they have no ownership or control of the physical equipment and properties being accessed through their platforms.



“...robotics are not poised to affect every area of the economy or replace human labor. Nonetheless, robotics still have the potential to be highly consequential for firms and, more broadly, for productivity.”

Legal risks

Product liability - Talc

Talc is a naturally occurring composition of magnesium, silicon, oxygen and hydrogen. It is used in a number of cosmetics and toiletries, such as talcum powder. From the 1970s onwards, several research sources have warned of the links from talc to cancer, including a study issued by researchers from Brigham and Women's Hospital in the US in 2015.¹⁴

Although scientific consensus has not officially been reached, two recent high profile court awards in the United States have linked the use of talcum powder for feminine hygiene purposes to ovarian cancer. The risk of other, as yet unknown, health risks associated with other (or related) products remains an ongoing concern.

The defendant in both cases is Johnson & Johnson, the pharmaceutical company that markets Johnson's baby powder. The defendant has been ordered to pay awards of US\$72m and US\$55m, with more than 1,000 other lawsuits still pending.¹⁵ Although these are the first charges to be upheld on product liability terms, the company lost a claim for negligence in 2013, where it was deemed it should have made the alleged link between its product and ovarian cancer known.

Like asbestos, this emerging product liability case continues to evolve. It is not clear yet, for example, how duration of usage will be identified and verified and how talc as a causation of the cancer will be measured and proven.

Johnson & Johnson is appealing the awards and continue to refute that a need exists for warning labels on its products. Insurers should be aware that talc litigation looks likely to continue into the future.

KPMG thoughts

The shape of insurance risks continues to shift and expand.

The shift to risk-based regimes enhances the ability of risk managers in the insurance industry to assess both the risk and opportunities associated with these shifts in a more dynamic manner than in the past. The monetary safety net that insurance provides to customers remains valuable. Increasingly, insurers are likely to be seen by their customers as important sources of support and advice as policyholders adjust their businesses.

The ongoing technological revolution continues to create new risks and business opportunities for insurers and their customers. This chapter has highlighted in particular how technology facilitates increased interconnectivity across different risk classes while generating new insurable risks.

It will be key for risk managers, regulators and insurers to continue to work together to keep on top of this continually changing environment.



End notes

1. A Climate Change Adaptation Report by the Prudential Regulation Authority to the Department for Environment, Food & Rural Affairs entitled "The impact of climate change on the UK insurance sector", dated September 2015
2. "What we know" section of the Earthquakes in Oklahoma website
3. IAIS Issues Paper on Cyber Risk to the Insurance Sector, dated 14 April 2016
4. SONAR: New Emerging Risk Insights; Swiss Re, dated May 2016
5. The Telegraph article entitled "How long until we have fully driverless cars?" dated 19 May 2016
6. JLT Specialty webpage entitled "How UK terrorism insurance is adapting to emerging risks", dated 24 April 2015
7. Market paper by the Lloyd's Emerging Markets Risk Team entitled "Pandemic: Potential Insurance Impacts", undated
8. Zika virus pages on the Centres for Disease Control and Prevention website
9. Financial Times article entitled "World Bank launches first insurance market for pandemic risk", dated 22 May 2016
10. Study entitled "The Future of Employment: How Susceptible Are Jobs to Computerisation?" by Carl Benedikt Frey and Michael A. Osborne, dated September 17, 2013
11. Technology at Work v2.0; Citi GPS: Global Perspectives and Solutions January 2016
12. The Economic Report of the President, White House Council of Economic Advisors, dated February 2016
13. Business Insider article entitled "Robots will steal your job: How AI could increase unemployment and inequality", dated 15 February 2016
14. "The Association Between Talc Use and Ovarian Cancer: A Retrospective Case-Control Study in Two US States", published in the peer-reviewed journal Epidemiology on an open access basis in May 2016
15. Article entitled Johnson & Johnson loses another talcum powder cancer lawsuit " published in the Los Angeles Times, dated 3 May 2016

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International developments dominate regulatory change is based on discussions with our member firms' clients, our professionals' assessment of key regulatory developments and through our links with policy bodies in each region.



Conduct risk: Increasing regulatory focus to align product, customer and value offers insights on industry developments by region with commentary on how regulators are driving change to align products and customers.



Regional regulatory developments considers the trends in each country based on ICP compliance, prudential developments, and conduct of business and consumer protection.



The impact of accounting changes on regulation changes on regulation provides a general overview of the forthcoming IFRS for insurance contracts, outlining the key aspects of the standard and offers KPMG professionals' perspectives regarding the efforts to create a globally consistent accounting framework for insurance contracts.

Please visit www.kpmg.com/eirr for the latest updates for this report.

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