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Liability claims trends: emerging risks and rebounding economic drivers

Executive summary

Profitability in liability insurance has been higher than expected in recent years, with weak economic growth helping to maintain a benign claims environment.

Liability claims trends have been lower than expected in recent years, bolstering profitability. Lower losses on new claims and redundant claims reserves for prior-year claims have supported underwriting results. The profitability improvement has come despite declining liability prices. Weak economic growth, which has dampened inflation and wage gains, has been a key reason behind the benign claims increases. Social factors such as tort reform and improvements in medical care costs have also contributed to lower-than-expected claims. In a highly unusual historical development, in many countries nominal claims growth has actually been significantly lower than nominal growth in economic activity since 2008.

New risks, social changes and economic activity will increase claims severity, boosting demand for liability insurance.

A number of technological, social and regulatory changes will shape the near-term future of liability insurance. Cyber risk and the liability from emerging technologies, such as hydrofracking and autonomous cars, may become more prominent in liability claims. Also the effects of tort reform, which had dampened claims severity in some markets, were a one-off benefit around their implementation and are not expected to suppress claims growth as much in the future. Other countries, meanwhile, are experiencing an expansion of litigation and litigation funding. Claims growth is expected to pick up to a pace that is again faster than gross domestic product (GDP) growth. Economic activity will also influence claims growth. For example, wage gains had been declining but are now beginning to accelerate. Many of these factors will increase liability claims and boost demand for insurance.

Premium growth will come from the large, mature liability markets.

Commercial liability premiums were about USD 160 billion in 2013, or 10% of the total global non-life market. Although high-growth markets offer longer-term business potential, current demand stems predominantly from advanced markets, which comprise 93% of total liability premiums.

Demand for liability insurance will rise as claims growth increases.

Liability claims are expected to revert to a more normal growth path, pushing up demand for insurance. A pick-up in claims growth will strain claims reserves, accelerating their depletion. Adverse developments and higher demand for cover will support increases in liability insurance prices. If adverse developments prove severe, however, the profitability of existing books of business will be eroded. Profits could also be contained if competitive forces keep prices from catching up with the claims trend.

Capital strength and underwriting expertise are key to protect against commoditization.

Liability risks are challenging to underwrite and price due to the long-tail nature of risks that often result in claims being settled many years after business is written. Additionally, risks can accumulate, causing a "clash" (when there are multiple liability claims originating from the same cause) or a casualty catastrophe, and can overlap with property risks. The need for underwriting expertise constitutes a barrier to entry and protects against commoditization, while the long-tail nature of casualty lines means insurers must maintain their capital strength to stay competitive.

Insurers use product and process innovation and quantitative analysis to improve underwriting quality and better understand new risks.

To capture opportunities in the casualty market in the face of competitive pressures, for instance from a growing litigation funding industry and other emerging risks, insurers need to constantly innovate. Enhanced capability with forward-looking modelling and Big Data will be necessary to manage the shifting bounds of insurability and maintain underwriting quality.

Introduction

Liability ranks among the top risks for businesses.

In a recent business risk survey by Travelers,[1] liability issues appeared to be the fastest growing worry for businesses, with medical cost inflation, legal liability and computer technology ranking as the three risks that increased most over the past five to 10 years. While 67% of businesses thought medical cost inflation was a leading risk for their business, 58% cited legal liability issues, such as errors and omissions, and 52% reported concerns in understanding and complying with US government laws, rules, and regulations. Meanwhile, 53% were concerned about technology, including data risks such as hacking and viruses.

Firms need to manage their liability risks, the costs of which can be very high. Insurance protects against the risk of large tort awards and defence costs.

Third-party liability is one of the most important insurable risks that firms need to manage. Faulty products, wrongdoings and negligence can cause harm to third parties, who are compensated under the rules of tort law. Tort events are relatively rare but when they do occur, the awards can be high, which is why insurance is purchased. Even if the firm is found not liable, legal defence costs can be significant.

Liability covers tend to be broader-scope than named-peril property policies ...

Liability coverage is generally broader than property coverage. Liability insurance may cover unknown and unexpected risks, including significant losses that may arise from changing interactions between technological innovation, society and the legal environment. In contrast, property insurance is mostly designed on the basis of "named perils". It provides cover for losses arising from explicitly defined causes, and claims cannot exceed the value of the insured goods. See the Appendix for an explanation of the various types of liability products.

Table 1:
Differences between liability and property covers

	Commercial liability insurance	**Commercial property insurance**
Trigger event	Usually all events which are not excluded from the policy terms.	Confined to named perils.
Insured risk	Legal liability claims of insured, often including defence costs.	Mostly refers to an observable insured object.
Size of a claim	Payout restricted by policy limit, defence costs are sometimes within the limit, sometimes not.	Payout restricted by policy limit and the value of the insured object.
Time between premium payment and claims settlement	Claims recognition may come with a lag and settlement can require longer time.	Short recognition lag and relatively quick settlement.

Source: Swiss Re Economic Research & Consulting

... although the size of insured liability claims is confined by policy limits.

The size of insured liability claims is primarily restricted by policy limits, which are calculated to allow for unexpected events. Liability claims are not tied to the value of assets of the insured, but to the bodily injury or physical damage claims of third parties. Liability risks are therefore more dependent on changes in the risk landscape than property coverage.[2]

[1] Travelers Business Risk Index (May 2014), https://www.travelers.com/prepare-prevent/risk-index/business/2014-Travelers-Business-Risk-Index.pdf.

[2] For a discussion of uncertainty associated with all-perils policies, see Kunreuther, Howard and Pauly, Mark, "What You Don't Know Can Hurt You: Terrorism Losses and All Perils Insurance," (December 2004), Wharton School, University of Pennsylvania, http://opim.wharton.upenn.edu/risk/downloads/archive/arch149.pdf.

Liability claims are subject to changes in social costs

Liability claims can spike unexpectedly …

Liability claims are highly exposed to economic, social and legal dynamics. This can lead to unexpected additional costs for insurers. There are two reasons for this:

… because claims settlements can often take years to finalise, during which time the variables determining final claims payments can change.

- In a liability claim, it can often take years to reach final settlement. In the time between the underwriting of a policy and settlement of claims, the variables determining the final claims payable often change. For instance, inflation can pick up, healthcare standards can improve and the general trend on size of legal awards may move upwards, all of which increase the claims burden. This problem becomes more acute the longer the tail. Thus, for example, asbestos and pollution claims have been even more vulnerable to unexpected spikes in cost burdens.

Also, liability risks can accumulate.

- Liability risks can accumulate since a single loss event may result in many claims being filed under different policies and across policy types by many injured parties. Accumulation risk can occur especially in lines such as product and environmental liability (including asbestos). It can also affect employment practices liability, directors' & officers' liability and professional indemnity, where significant changes in judicial rulings may have implications for a large number of similar claims. Because of the risk of very large claims, the insureds demand larger limits, which are often provided by layering umbrella or excess liability policies (see Appendix for a description of these and other products).

The insurability of liability risks

Determining the insurability of liability risks can be challenging.

Some liability risks are uninsurable, and it can be challenging to distinguish between what is and what is not insurable. Insurable risks have several key attributes: they are measurable, loss occurrences are independent, actuarial premium rates are acceptable to both insurer and insured, and there are enough insurers who believe in the insurability to offer sufficient aggregate protection for maximum losses.[3]

Projecting claims of liability risks is particularly demanding.

A key factor limiting the insurability of liability risk is the difficulty of projecting claim costs, which is essential for the pricing of risk. This is usually referred to as ambiguity or parameter uncertainty, and includes the problem of estimating the probability distribution used for pricing. The uncertainties may be more acute due to a lack of historical claims or related data, or to imperfect scientific knowledge about the risk.

Liability risks are different from property risks because they are to a much greater extent determined by human behaviour.

Another key problem is that liability risk evolves with economic and social conditions. More so than natural catastrophe or mortality risks, liability risks involve human behaviour and complex societal relationships, which are difficult to predict with quantitative models. Also, the law is constantly changing, making past experience a poor predictor of the future. Trials gain relevance quickly through the evolution of case law and the adaptive behaviour of plaintiffs and their trial lawyers. In addition, frequency and severity are difficult to estimate for new technologies whose adoption is uncertain and whose impacts will not be known for many years. Insurers respond to parameter uncertainty by charging higher risk premiums which in turn reduces the demand for insurance protection.

The bounds of insurability can change over time, as improvements in modelling may increase insurability, while changes in risks may reduce insurability.

What is insurable in the market can change over time. For example, the application of advanced data analytics may help overcome some of these underwriting restrictions by closing the information gap, increasing insurability. On the other hand, if an insured risk has sharp increases in frequency or severity in ways not envisioned by the insurer, the additional substantial losses may even bankrupt the insurer. In such cases, a risk once deemed insurable can become challenging to insure or uninsurable, as has happened with asbestos liability, pharmaceutical product liability, and professional liability for financial institutions.

[3] Swiss Re, *sigma* 4/2005, "Innovating to insure the uninsurable".

This *sigma* focuses on general liability claims trends in mature markets.

This *sigma* study focuses on commercial liability trends in mature insurance markets. Motor liability and workers' compensation are not covered because these markets are exposed to significantly more regulation, which changes the key drivers. Liability relating to specialty lines such as marine and aviation is also not explicitly covered. The next chapter describes the characteristics of the largest liability markets globally. The fourth analyses claims trends in a number of different countries over a long period, explains why the recent benign trends are exceptional and also forecasts future claim developments based on economic drivers. The fifth chapter discusses current and emerging liability risks and legal developments which will shape liability insurance in the future. Before concluding, the sixth chapter reviews innovation and underwriting issues.

Structure of liability markets

How big are the markets?

Global commercial liability premiums written were USD 160 billion in 2013, or 10% of the total non-life market.

Commercial liability is an important segment for the insurance industry. With premium income of USD 160 billion in 2013, it accounted for 10% of global non-life premiums of USD 1 550 billion, or 23% of the global commercial lines premiums. Liability insurance is far more prevalent in the advanced than emerging markets. The advanced markets accounted for 93% of global liability premiums in 2013, while their share of global non-life premiums was 79%.

Table 2:
The 10 largest commercial liability markets in 2013

		Premiums & GDP (USD billions)			Percentage shares	
Rank		**Liability**	**Total non-life**	**GDP**	**Liability/ total non-life**	**Liability/ GDP**
1	US	84.0	531.2	16 802	15.8%	0.50%
2	UK	9.9	99.2	2 521	9.2%	0.36%
3	Germany	7.8	90.4	3 713	8.7%	0.21%
4	France	6.8	83.1	2 750	8.2%	0.25%
5	Japan	6.0	81.0	4 964	7.3%	0.12%
6	Canada	5.2	50.5	1 823	10.3%	0.29%
7	Italy	5.0	47.6	2 073	10.6%	0.24%
8	Australia	4.8	32.7	1 506	14.8%	0.32%
9	China	3.5	105.5	9 345	3.3%	0.04%
10	Spain	2.2	31.0	1 361	7.0%	0.16%
	Top 10	**135**	**1 152**	**46 857**	**11.7%**	**0.29%**
	World	**160**	**1 550**	**61 709**	**10.3%**	**0.26%**

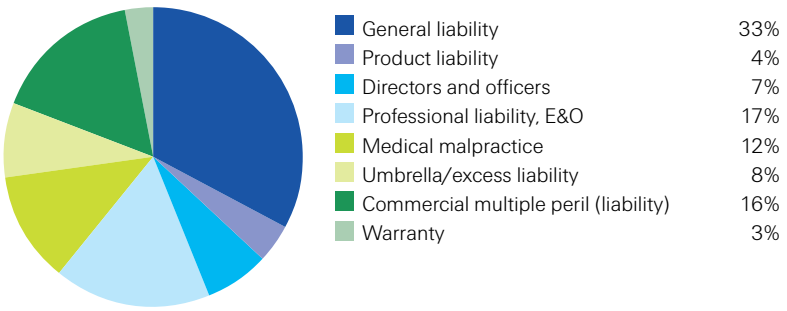
Note: Non-life excludes health insurance. Premium volumes are for domestic business where separation is possible (eg, the UK).

Source: Swiss Re, Economic Research & Consulting

The US is the largest liability insurance market.

The US is by far the largest market, with 51% of the global liability premiums written in 2013. This is due to the size of the US economy and high penetration of liability insurance (0.5% of GDP). In 2013, US businesses spent USD 84 billion on commercial liability covers, of which USD 50 billion was on general liability, including USD 12 billion for Errors and Omissions (E&O) and USD 5.4 billion for Directors and Officers (D&O). US businesses spent another USD 13 billion on the liability portion of commercial multi-peril policies, USD 9.5 billion for medical malpractice and USD 3 billion for product liability covers.

Figure 1:
US liability premiums 2013, by line of business, %



Source: A.M. Best, SNL, Economic Research & Consulting

The US legal system produces most liability awards of USD 1 billion or more

One of the highest damages award ever made was in April 2014, when a US jury in Louisiana ordered a Japanese drug maker and its American partner to pay a combined USD 9 billion in punitive damages to the plaintiffs over a diabetes drug that was linked to cancer. The US legal system produces most of the world's awards of USD 1 billion or greater. US juries awarded three such verdicts between 2011 and 2013 and also three between 2006 and 2010.[4] The rise of billion-dollar verdicts reflects a pipeline of class action cases related to corporate misconduct during the financial crisis. Many of the cases combine the elements of large public corporations as defendants, class actions and punitive damages.

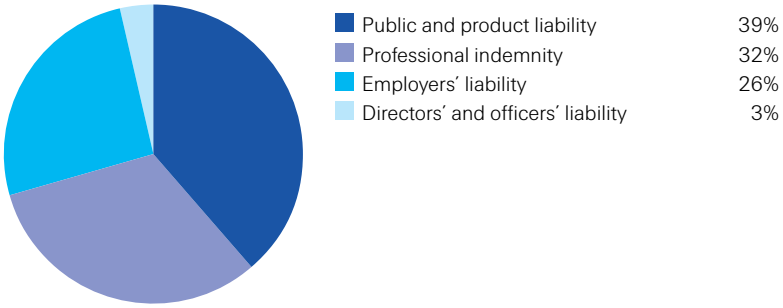
The UK is the second largest liability market. The rise of professional indemnity reflects the growth of an increasingly services-based economy.

The UK is the world's second largest market for liability insurance, with USD 9.9 billion of liability premiums in 2013. The largest sub-line of business is public and product liability. This is followed by professional indemnity and employers' liability (cover for employment-related accidents and illnesses). There has been a significant shift in the sub-segments of UK liability insurance. In the last decade, the share of professional indemnity has increased from about 14% to 32%, highlighting the shift towards a more services-driven economy. Manufacturing, meanwhile, comprises a lower share of liability claims as accidents related to injuries and property damages have declined.

The London market originates most UK liability business, and USD 9 billion of non-UK risks also.

Most UK liability business originates in London. As the principal marketplace for international commercial insurance and reinsurance, the London market deals with risks both inside and outside the UK. The outside-UK business (called "home-foreign") contains a significant portion of risks located in the US and other parts of the world, and is transacted by Lloyd's and other internationally active insurers. It generated overall premium income of approximately USD 9 billion in 2013.

Figure 2:
UK liability premiums 2013, by line of business



Source: Association of British Insurers

[4] "Top Jury Verdict Awards in 2013", Claims Journal (15 January 2014).

Local conditions and past experience determine which policies are sold in Europe's markets.

In continental Europe, the largest liability insurance markets are Germany, France, Italy and Spain. Together they made up almost USD 22 billion of global liability premiums in 2013. Typically governed by civil law systems, these markets rely on local conditions and historical experience to determine which liability policies and covers are available. Penetration ranges from 0.16% to 0.25%, which is low compared to the common law countries such as the US, the UK and Australia.

The German commercial liability market is dominated by general and product liability, but professional indemnity is growing rapidly.

The German commercial liability market, with USD 7.8 billion in total premiums in 2013, is dominated by general and product liability covers. This is partly due to the country having a still-significant manufacturing sector relative to other European countries. However, the share of professional indemnity is increasing because of medical malpractice insurance which, contrary to the other liability segments, has experienced a rapidly worsening of loss ratios (claims/premiums) since 2004. The weakening loss ratios led to reserve strengthening and market exits of major insurance providers. Hospitals and doctors were subject to significant rate increases due to malpractice risks. The rates became unaffordable for many, particularly midwives and obstetricians because these are high-risk specialists.

Professional indemnity is the largest liability segment in France.

In France, third-party liability premiums totalled USD 6.8 billion in 2013. These were mostly professional indemnity covers because in France more than 100 professions require compulsory covers. Décennale (or decennial) construction liability insurance (10-year building warranty cover) alone counts for a third of the premiums. Medical malpractice accounts for about USD 800 million.

Malpractice insurance became mandatory in Italy in 2012.

In Italy, with USD 5 billion in premiums, professional indemnity is also becoming increasingly important. Medical malpractice became mandatory in 2012, addressing some of the structural issues that had affected this line. Although work-related injuries are covered by the social security system, employers often buy employers' liability cover as an extension to general third-party insurance. This bridges the gap between the reimbursements provided by the INAIL (social security system) and the damage payments ordered by Italian courts.

The Spanish market shrank during the economic crisis.

The Spanish liability market generated premiums of USD 2.2 billion in 2013. The market has shrunk significantly during the recent recession years, with penetration falling to 0.16% of GDP last year from 0.18% in 2010. The main lines of business are liability and professional indemnity, followed by construction.

The Canadian market has been growing rapidly.

Canada is one of the few countries outside of the US where securities class action litigation has become well-established, even though frequency remains low. With extensive cross-border trade, Canadian companies are highly exposed to US litigation,[5] and this has increased demand for D&O cover. The Canadian liability market is currently the sixth-largest in the world with USD 5.2 billion in premiums (2013). It has been growing at a rapid average annual rate of 9% since 2000. Recent regulatory rulings finding companies liable for environmental clean-up costs are also expected to increase demand for environmental coverage in Canada.

Japan and Australia are the largest markets in Asia Pacific. Penetration is considerably greater in Australia.

Japan and Australia are the largest markets in the Asia Pacific region, with commercial liability premiums of USD 6.0 billion and USD 4.8 billion, respectively, in 2013. At 0.12% of GDP, the penetration of liability insurance in Japan is much lower than in other advanced economies. In Australia, penetration is much higher at 0.32% of GDP. This is due to the country's Anglo-American legal framework, which has increased demand for employers' liability insurance. Australia has mandatory covers for aviation, maritime oil pollution and residential construction and, in certain states, for medical practitioners, property brokers and stock brokers. Liability insurance premiums have grown at an average annual rate of 11% since 2000.

[5] Nine Canadian-domiciled companies were the subject of US securities class actions in 2013.

The Chinese market is growing rapidly and is now the ninth largest globally.

China is the ninth largest commercial liability market globally, with premiums of USD 3.5 billion in 2013[6] and strong annual average growth of 22% since 2000. However, penetration remains low at 0.04% of GDP. Growth has been driven by increasing risk awareness and regulatory changes. For instance, a tort reform law in late 2009 introduced joint and several liability of tortfeasors (the liable wrongdoer), while the scope of strict liability was expanded to cover more economic activities.[7] Starting 1 July 2011, in Beijing high-risk industries such as mining, construction and hazardous chemicals were required to purchase employers' liability and public liability insurance. Given growing concerns about the environment, regulators have also increased focus on pollution and environmental liability insurance. Taking stock of the experiences from various pilot schemes across the country, nationwide compulsory environmental impairment liability is planned for 2015, though only for designated heavily-polluting industries.

Aside from risky industries and environmental liabilities, the Chinese authorities are also interested in promoting insurance for food safety and medical malpractice.

Other areas the Chinese authorities are promoting are food-safety liability and medical malpractice insurance. On food safety, Beijing introduced a program targeting the food processing and distributing industries, which is currently being reviewed by the national legislator. It is not expected to be compulsory, but may contain tax incentives. Finally, on medical malpractice insurance, several government agencies issued a paper on strengthening medical liability insurance. The report points out that by the end of 2015, the penetration of medical liability insurance for first-tier public hospitals will likely reach 100% and about 90% for second-tier hospitals.

[6] An estimated 25-30% of this premium volume was for passenger (or carrier) liability, which in other jurisdictions would have fallen under motor liability.

[7] Under joint liability, the two or more defendants are jointly liable up to the full amount of the obligation. Under several liability, the defendants are only liable for their proportionate share of the obligation. Under strict liability, the defendant is liable for his/her acts regardless of culpability or intent.

Economic drivers of claims

Claims growth trends

Claims trends will likely worsen in the future.

Claims trends have been relatively benign recently, but this is expected to reverse soon. Claims costs are likely to increase at a more rapid pace, turning reserve releases into adverse reserve developments (more reserves will be needed to be held for future claims).

Economic, social and legal changes drive claims trends.

Claims trends and rate changes determine underwriting profitability. There has been a lot of attention on rate trends over the last decade because severe under-pricing resulted in massive underwriting losses in the last soft market. This *sigma* focuses on claims trends, which are a challenge to capture and assess. The most important drivers for liability claims developments are economic, social and legal changes, which are often disruptive rather than incremental, and which increase the difficulty of parameter assessments. The impact of economic factors is reviewed in this chapter, while select social and legal developments are covered in the next chapter.

"Claims paid" refers to claims payments during a year, while "claims incurred" includes estimated unpaid liabilities.

Claims paid vs. incurred, and accident-year vs. calendar-year claims

Claims are reported in several ways. "Claims paid" are the claim payments during a year, while "claims incurred" also include an actuarial estimate of unpaid liabilities. In other words, claims incurred for a particular year are claims paid plus the claims reserves set aside for future payments.

"Accident-year" claims are allocated to the years in which accidents occur; "calendar-year" claims are based on an accounting point of view.

Claims incurred can be measured on "calendar-year" or "accident-year" basis. Under the accident-year view, loss data are allocated to the years in which the accidents occur, regardless of when a loss is reported or paid. Calendar-year claims incurred cover the loss experience from an accounting point of view, irrespective of the effective dates of the policies or the dates of the accidents from which the losses arise. They therefore contain changes in claims reserves for prior years, which are labelled as reserves strengthening or adverse developments when reserves need to be added, or as reserve releases when holding reserves is deemed unnecessary. Strengthening of prior years' reserves adds to the calendar-year claims costs, while reserve releases reduce claims costs.

Calendar-year data can be influenced by reserves cycles.

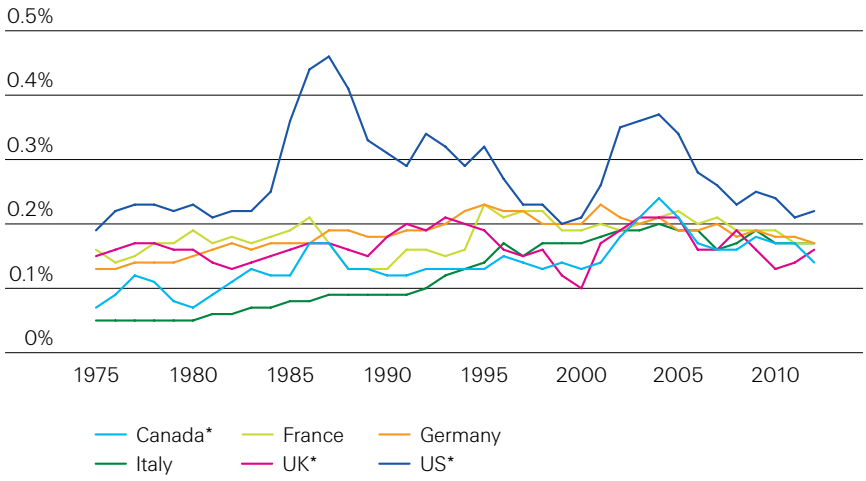
Recent claims growth trends

Calendar-year claims are most commonly used to depict claims growth trends as this data is the most readily available. Unless otherwise stated, this study uses calendar-year numbers. Note, however, that calendar-year data can be overlaid by reserve cycles, which distort the underlying actual claims developments. This cyclical element is more pronounced in the US, and also the UK and Canadian markets, where significant US exposures are insured.

After 2004, liability claims started to decline relative to GDP, mostly due to reserve releases.

Figure 3 illustrates the long-term trend of general liability claims in relation to general economic activity (nominal GDP). Before 2004, the penetration of liability claims (as a percentage of GDP) trended up in all markets shown, as liability claims grew faster than GDP. This trend peaked in 2004 after which claims grew slower than GDP in all major markets. In inflation-adjusted terms, claims actually declined between 2004 and 2012. A large part of the decline was driven by the reserves cycle (ie, adverse developments, which add to claims incurred, gave way to reserves releases which reduce claims incurred). There were other reasons for the decline also, including a slowdown in healthcare expenditures in the 2000s in many countries, and tort reform in the US and Australia that reduced claims trends in the mid-2000s.

Figure 3:
General liability claims incurred as a % of GDP, calendar-year view



*Net claims incurred; Germany, France and Italy are direct claims incurred.
Source: Swiss Re, Economic Research & Consulting

Underlying claims declined from 2008 onwards also, due to the global recession.

The decline in claims that began in 2004 was prompted by a turn in the reserves cycle. After 2008, however, the slowdown in underlying claims trends was due to the global recession. This can be shown with accident-year claims data, which are not as distorted from prior-year impacts as calendar-year data are. According to data from the US and the UK,[8] accident-year claims incurred fell behind economic growth in the years 2008 to 2012 (see Table 3). The growth gap was 3.8 percentage points for the US and 3.1 points for the UK. This contrasts with a pre-crisis average pattern of liability claims growing by 10% (UK) to 20% (US) faster than GDP.

Table 3:
Growth in general liability accident year claims incurred vs. nominal GDP, 1995–2008 and 2008–12

1995–2008	US	UK
Accident-year claims growth	6.3%	5.9%
GDP growth	5.1%	5.3%
Growth gap to GDP	1.2%	0.6%

2008–12	US	UK
Accident-year claims growth	–1.3%	–1.3%
GDP growth	2.5%	1.8%
Growth gap to GDP	–3.8%	–3.1%

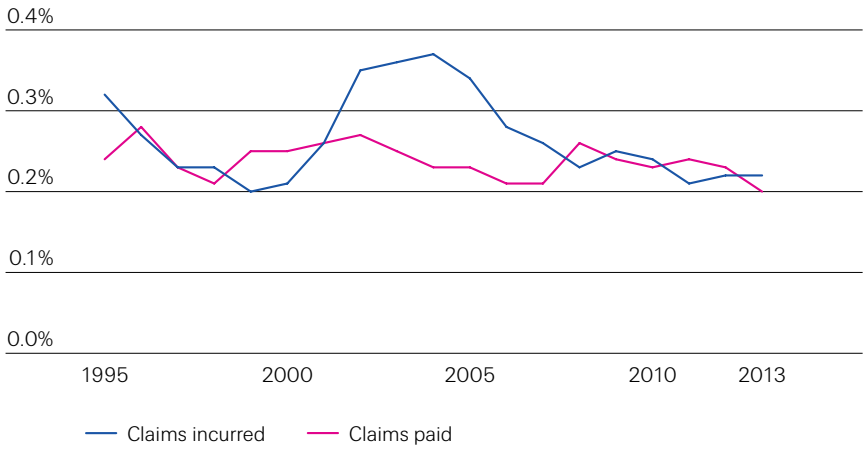
Note: claims are claims incurred, net of reinsurance.
Sources: A.M. Best, SNL, Swiss Re Economic Research & Consulting

[8] Accident-year data are not available for other markets.

In the US, macro drivers reduced claims paid for new and old claims after 2008.

A slowdown can also be observed in US liability claims paid after 2008. Unlike claims incurred, claims paid are not impacted by reserving and reserving cycles. In the US, claims paid as percentage of GDP actually declined after 2002, primarily because of tighter terms and conditions and higher retentions of insurance clients during the hard market. The decline in claims paid after 2008 was predominantly due to the recession and weak recovery affecting claims that were incurred before the crisis. The recession lowered the frequency of claims because employment in high-risk industries, such as manufacturing and construction, declined more than service sector employment. The economic drivers appear to have also reduced the severity of claims as medical expenses and wage growth trended downwards. The crisis curbed wage growth through weak labour markets, while the slowdown in health expenditures started earlier.

Figure 4:
US general liability claims paid and incurred as a % of nominal GDP, 1995–2013

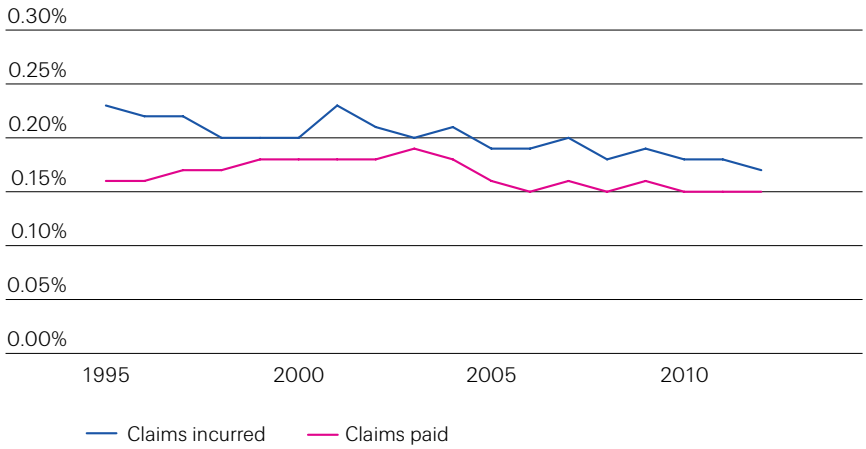


Source: Swiss Re, Economic Research & Consulting

A similar trend towards lower claims can also be seen in Germany.

Similar underlying trends can be seen in Germany, although there was less distortion of the data from the reserving cycle because the net reserve adjustments were fairly smooth. German general liability claims paid and claims incurred have both declined over the last decade in relation to economic activity. Unlike in the Anglo-American markets, claims dynamics in continental Europe tend to be less volatile due to the countries' stable social security systems. In Germany, growth in real claims incurred were negative after 2008 while GDP grew marginally.

Figure 5:
General liability claims paid and incurred in Germany as a % of nominal GDP, 1995–2012

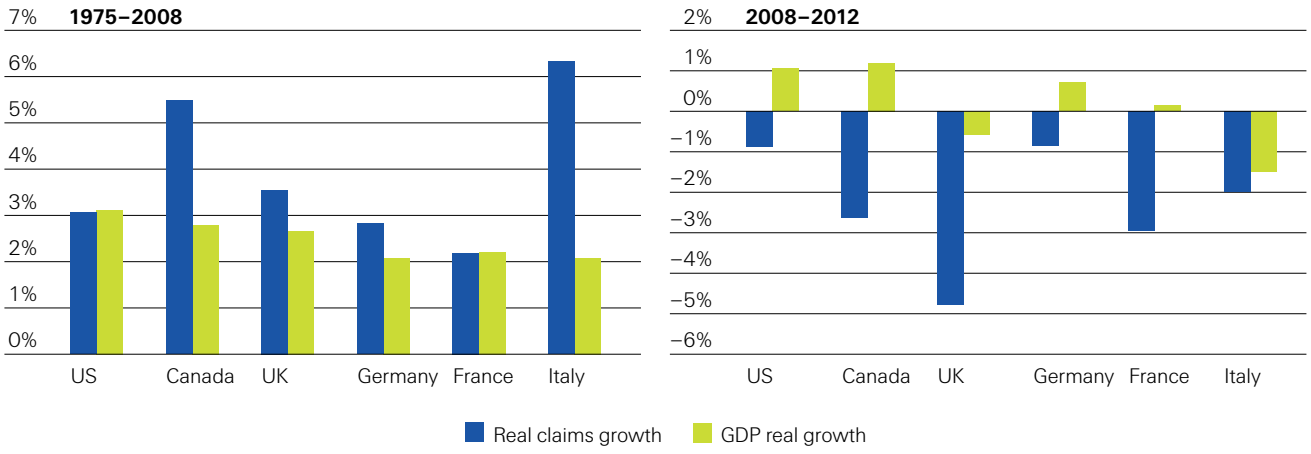


Source: Swiss Re, Economic Research & Consulting

In the long term, premiums and claims growth typically outpace economic growth and inflation.

The decline in claims growth after 2008 has occurred in many mature markets. This highlights the role of the global recession as a common factor behind the decline, as opposed to country-specific trends such as regulation. The unique nature of this recent development becomes evident when splitting the trends into pre- and post-recession periods. In the long term, premiums and claims outpace economic growth, since the scope of liability generally increases. The left-hand chart in Figure 6 depicts the traditional relationship between economic growth and claims growth for a number of large and advanced economies in the period 1975–2008. Since 2008, however (right-hand chart), the liability growth dynamics have completely changed. Liability claims declined in all of the markets shown.

Figure 6:
Real average growth per year in general liability claims incurred vs GDP, 1975–2008 and 2008–12



Source: Swiss Re, Economic Research & Consulting

Claims growth is more correlated with healthcare expenditure growth than with inflation and wage gains.

Claims growth and macroeconomic factors - quantifying the relationship

Of the macroeconomic variables analysed in the advanced markets, liability claims were generally more closely correlated with total healthcare expenditures than with CPI inflation or wage gains, especially when looking at multi-year average growth rates. This is because of the large share of bodily injury claims covered by general liability, including product liability. Bodily injury claims predominantly compensate for medical expenses, costs of care and loss of income. To a lesser degree they also cover non-economic damages such as pain and suffering and, in the US, punitive damages. Over the long run, healthcare expenditures seem to have grown at roughly the same pace as liability claims (see Table 4).

Table 4:
General liability claims and macro variables, nominal growth. 1975–2008

1975–2008	US	Canada	UK	Germany	France	Italy
Compound annual growth rates						
General liability claims	7.5%	10.0%	8.9%	5.5%	6.7%	13.9%
Nominal GDP	6.8%	7.0%	8.3%	4.4%	6.6%	9.7%
Consumer price index	4.3%	4.2%	5.2%	2.6%	4.4%	7.1%
Wage index	4.7%	4.8%	7.2%	2.5%	6.2%	8.4%
Healthcare expenses	9.0%	8.9%	9.9%	5.2%	7.9%	n.a.
Ratio of claims growth to growth in						
Nominal GDP	1.10	1.42	1.08	1.23	1.01	1.43
Consumer price index	1.74	2.34	1.72	2.13	1.51	1.95
Wage index	1.59	2.08	1.25	2.17	1.09	1.65
Healthcare expenses	0.83	1.11	0.90	1.04	0.85	n.a.
Correlation coefficient of claims growth with						
Nominal GDP	0.14	0.23	0.14	0.50	0.27	0.70
Consumer price index	0.00	0.29	0.17	0.40	0.28	0.70
Wage index	0.10	0.26	0.17	0.47	0.26	0.69
Healthcare expenses	0.32	0.35	0.19	0.35	0.42	n.a.

Claims growth is based on calendar-year claims incurred.
Source: Swiss Re, Economic Research & Consulting

Until 2008, liability claims grew faster than inflation and GDP, and at a similar pace to healthcare costs.

In order of magnitude, claims growth was most similar to healthcare expenditures in the period 1975–2008, followed by nominal GDP growth, wage inflation and inflation in all markets in the sample. In the major markets, liability insurance claims rose faster than the general consumer price index (CPI). The ratio of liability claims growth to CPI inflation ranged from 1.7 in the US to 2.3 in Canada. In terms of correlation of claims growth with CPI inflation, the correlation was higher for the continental European markets of Germany, France and Italy (0.4–0.7) than for the US, the UK and Canada (0.0–0.29). General liability claims also grew faster than general economic activity (nominal GDP). General liability claims rose by roughly 1% for every 1% rise in GDP in France and by 1.4% in Canada and Italy, while the US, the UK and Germany were between this range.

The correlations are stronger for multi-year data sets.

The correlations between annual claims growth and macro variables were not very strong. This is not surprising because the claims information is derived from insurance accounting data which is distorted by noise from reserving and delays in claims reporting. Also, some of the economic causation comes with a time lag.

Economic developments and the outlook for claims growth

Healthcare expenditures and wage gains have been low since 2008 due to the recession.

Many macro variables that have an impact on liability claims severity were affected by the recession starting in 2008 and subsequent weak global economic recovery. High unemployment lowers wage inflation, which also reduces growth in healthcare expenditures. In the US, healthcare expenditures were also affected by the implementation of the Affordable Care Act that limited cost increases. Furthermore, governments were under ongoing fiscal strain, which may have contributed to healthcare expenditures rising more slowly. Liability settlements on compensation for lost income were probably lower due to weak employment prospects and low wage increases.

The macro environment is forecast to improve, which will push claims trends higher in the medium to long term.

Many of these core macro factors are expected to rise (see Table 5) and are likely to create upward pressure on liability claims payments. With rising claims, demand for commercial liability covers will likely pick up as well. The biggest changes in healthcare expenses are expected in the US, Canada and the UK. Wage gains will be the largest in the UK, Italy and the US. Germany's economy has been doing well and is not expected to have stronger wage growth in 2020 than in 2012, but healthcare expense growth will rise by a percentage point.

Table 5:
Forecasts of macro drivers, average growth 2014–20

Forecasts, average growth 2014–20	US	Canada	UK	Germany	France	Italy
Nominal GDP	4.7%	4.3%	4.7%	3.6%	2.8%	2.7%
Real GDP	2.8%	2.5%	2.5%	1.6%	1.3%	1.0%
Healthcare expenses	5.5%	4.9%	4.3%	4.4%	4.0%	n.a.
Wages	3.4%	3.2%	3.6%	3.2%	2.2%	1.4%
Consumer price index	2.1%	1.8%	2.1%	1.9%	1.5%	1.5%

Source: Swiss Re, Economic Research & Consulting

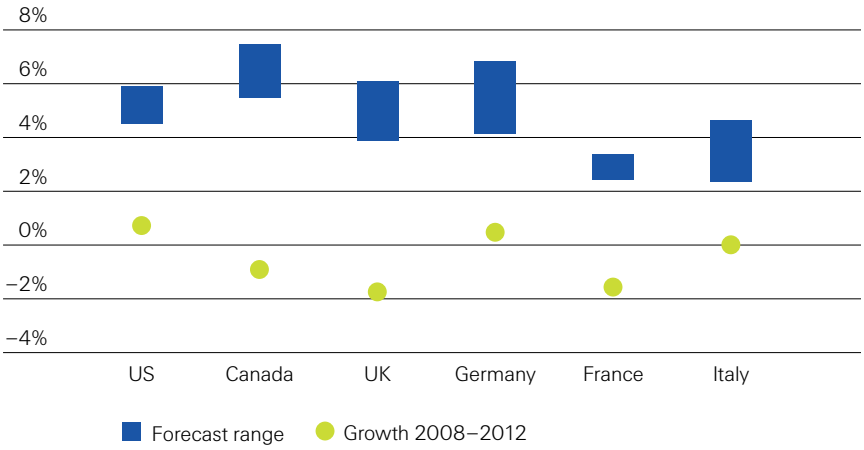
A reversion to pre-crisis claims growth patterns is likely …

Based on historic relationships (see ratios in the middle segment of Table 4), multiplied with our forecasts for key macro variables (see Table 5), future annual nominal claims growth in the period 2014–20 are expected to average 2–3% in France, 3–4% in Italy, 4–6% in the UK, 4–7% Germany, 5–6% in the US, and 6–7% in Canada. The median of these ranges implies an increase of 5-7% per annum.

… but there are different drivers in different countries.

There are multiple drivers for the ranges across countries. The US, Canada and the UK have the highest GDP growth forecasts for the coming years, and France and Italy the lowest. As such, claims growth in France and Italy is expected to be less than in the other markets. At the same time, however, the UK and France have historically shown low growth of claims in relation to GDP, while Canada and Germany have historically demonstrated high correlation of claims growth to wage and CPI inflation.

Figure 7:
Range of expected nominal claims growth (2014–20) vs recent growth (2008–12)



Source: Swiss Re, Economic Research & Consulting

An alternate scenario could be that claims growth remains below historical averages due to structural changes …

All told, there is no guarantee that the future relationship of macro drivers and claims growth will be the same as in the past. An alternative "lower-for-longer" scenario would come from persistent structural changes that keep claims growth and demand below nominal GDP growth for the foreseeable future. The changes could be, for instance, in legal developments (eg, tort reform), the healthcare system (see the text box on US healthcare reform), and/or the insurance coverage. This is not our baseline assumption, but the scenario is possible.

… but without knowing the net effect of such changes, historical averages remain the foundation of the baseline forecast.

Chapter 5 discusses various trends that could lead to structural changes. Some of these would actually lead to more claims. Therefore without a compelling case for the net effect of all these potential structural trends, the baseline forecast relies on returning to historic averages.

US healthcare reform and claims severity

The PPACA legislation in the US could affect all lines of business that involve bodily injury.

The Patient Protection & Affordable Care Act (PPACA), a federal statute designed to reform healthcare administration in the US, has the potential to impact all casualty lines of business that involve coverage for bodily injury. The most important lines are motor liability, workers' compensation and employers liability, general third-party premises and products liability, and medical professional liability.

Recent research estimates that the PPACA could reduce auto and workers' compensation claims but increase medical malpractice costs.

A recent study by the Rand Corporation, a non-profit research organization, attempted to quantify the impact of the PPACA on liability insurance in the US national healthcare system.[9] Claims costs will likely fall for workers' compensation and general business liability insurance, but will likely rise for medical malpractice, the study says. Uncertainty as to the full extent of impact remains but the study estimates that the PPACA could cause potential decreases of 1.4% (USD 200 million) in first-party automobile insurance claims, 1.7% (USD 540 million) in third-party auto claims and 1.4% (USD 930 million) in workers' compensation claims. At the same time, there could be a potential 2.4% (USD 120 million) increase in medical malpractice costs. The overall impact may be relatively small when averaged across the US, but there will be significant variation between states.

There will likely be considerable variation in claims patterns in different states.

In the longer term, improved health and universal coverage could reduce the need for workers' compensation insurance.

In addition to a likely improvement in the general health and well-being of the population due to the PPACA, there are potential longer-term effects that could impact liability insurance. The first could be an eventual change to the coverage of work-related health expenses. For example, state-level workers' compensation systems were developed in the US at a time when health insurance was unavailable to the majority of the population. If the PPACA does bring a universal healthcare system, the need for workers' compensation insurance may decline.

On the other hand, state budgetary pressures could lead to more subrogation against liability insurers, leading to higher claims costs.

As more people gain health insurance coverage through Medicaid,[10] which is funded by the states, pressure on state budgets will drive administrators to cut costs. Not unlike Medicare in recent years, Medicaid could potentially look to achieve cost savings through more aggressive subrogation against liability insurers. This could potentially lead to higher claims costs for liability insurers for a number of lines of business, including workers' compensation.

Implications for reserving

Rising casualty claims costs can lead to adverse developments.

Based on expectations of future claim costs, insurers set aside reserves to meet their future claim payments. However, if economic or social factors boost claims beyond initial expectations, additional reserves need to be set aside in a process referred to as "adverse reserve development." On the other hand, if claims prove to be lower than expected, then some reserves are redundant and these can be "released". In the US, liability reserves are still redundant on average, but the pace of liability reserve releases is moderating. Prior-year claim reserves for commercial auto liability, liability claims made (a category that comprises D&O and professional liability) and workers' compensation are developing adversely (ie, current claims are worse than previously expected) for recent accident years.

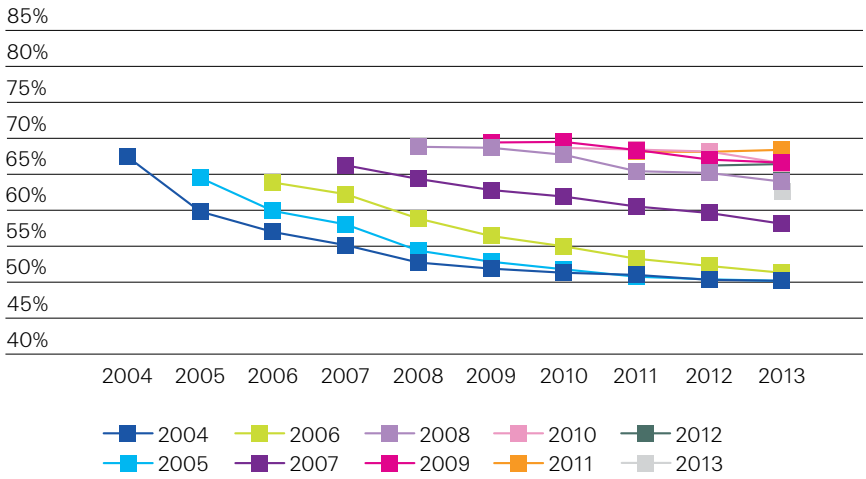
[9] David I. Auerbach, et al, "How Will the Patient Protection and Affordable Care Act Affect Liability Insurance Costs?" (2014), RAND Institute for Civil Justice.

[10] Medicaid is a US federal healthcare program for low-income households; Medicare is a US federal healthcare program for the elderly and disabled.

Is the period of large reserves releases over in the US?

The 2004 to 2008 accident years have resulted in large reserves releases in the US (see Figure 8). The 2004 accident-year loss ratio improved a full 17 points from the initial reserving through 2013, while for 2005 it improved by 15 points. But the loss ratios for both did stabilize in more recent years. The magnitude of releases for successive accident years declined from 2004 to 2008. More recent underwriting years (2009–11) have had higher initial loss ratios and have not necessarily developed positively. The initial loss ratios for the accident years 2012 and 2013 were lower than 2011, reflecting the rate increases of those years. The lack of systematic releases for the accident years 2009 and later suggests that the reserves for these accident years are not redundant and could develop negatively if claim costs increase. These years account for about 80% of the non-legacy reserves[11] on the balance sheets.

Figure 8:
US other liability accident-year loss ratios



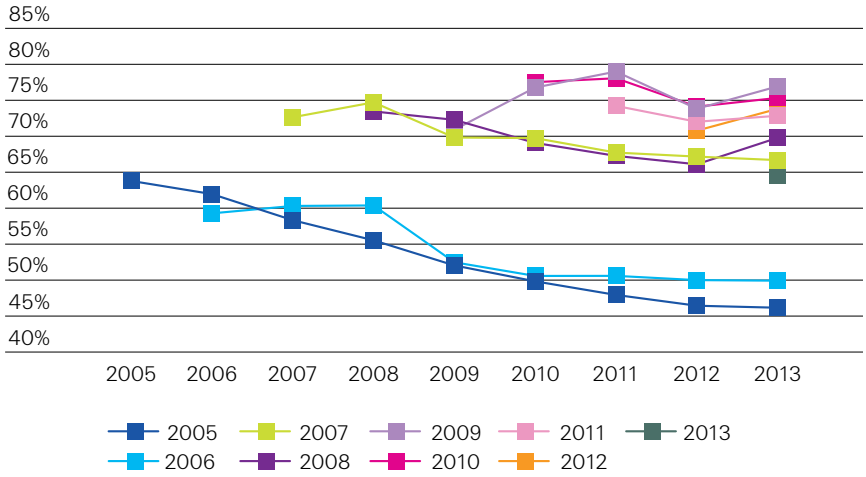
Source: SNL

Changes in UK reserves patterns have been more moderate.

As shown in Figure 9, the reserve trends in the UK developed similarly to the US, particularly in 2005 and 2006, with significant positive reserve releases starting from comparable first-year loss ratios. However, from 2007 onwards UK companies started with higher first-year claims estimates than in the US. Accident years 2007 and 2008 mostly developed positively but to a far lesser extent than the earlier two years shown. For the most recent years (2009 and later), the loss ratios have not had a systematic trend, with some developing positively while others deteriorated. For the years 2008–12, the loss ratio climbed in 2013.

[11] We exclude reserves from accident years prior to 2003. The bulk of these older (legacy) reserves relate to asbestos and environmental claims.

Figure 9:
UK public (general) liability accident-year loss ratios, excluding employers liability



Source: Swiss Re, Economic Research & Consulting, PRA/FSA returns

Reserves changes are a lagging indicator but adverse development may trigger rate increases.

Thus the pattern of falling loss ratios has been slowing. Future reserves changes may in aggregate turn negative, resulting in adverse developments. Reserves changes are a lagging metric for monitoring claims trends, which may show turning points in underlying trends only years later. However, there is a lot of attention on reserves adequacy since adverse developments have often been a catalyst for premium rate increases, bolstering profitability.

Social and legal drivers of claims

Select social and legal claims drivers

Risk exposures in advanced economies are driven by a variety of social and legal factors.

There are many emerging liability trends, rooted in either changing exposures or the development of the legal (tort) system. These, in addition to economic drivers, will influence developments in liability claims. The trends selected for review here are risk accumulation, hydrofracking, cyber risks, autonomous cars, tort reform, litigation funding and the expanding liability rules in the European Union.

Insurers are concerned about the potential for risk accumulation.

Risk accumulation: a growing threat to insurers

Insured losses from one event can span multiple risks affecting companies, countries, industries and lines of business. This creates the potential for catastrophic risk accumulation.

Large industrial accidents can cause casualty catastrophes.

Liability (or casualty) catastrophe losses are large events that may be triggered within a single policy or line of business, or multiple policies and risks. Catastrophic losses in casualty are often triggered by large "sudden and accidental" loss events such as rail accidents, building collapses or chemical explosions, which incur damages for multiple parties and have implications that can spread rapidly across industries and borders. One of the largest recent casualty claims events was the Deepwater Horizon oil spill, leading to the filing of up to 300 lawsuits against BP and other defendants.[12] Other large casualty claims events were the building collapses at the World Trade Center and Paris Airport, the Mont Blanc tunnel fire, and chemical explosions in San Bruno and Toulouse.

"Liability clash" occurs when a single scenario involves multiple policies and/or policy classes.

Liability clash involves a loss to multiple policies or risks caused by a single event, or more broadly by a common cause or the same originating cause. This can refer to a portfolio of the same policies, or cross products and lines of business. An event such as the collapse of a construction crane in a city street can generate claims from general liability, product liability, workers' compensation and motor policies. With many risks and several lines of business involved, insurers' losses can become significant, turning the liability clash into a catastrophe. This type of accumulation has caused some of the largest loss complexes such as Enron, Worldcom and Initial Public Offering (IPO) laddering.[13]

There is an increasing overlap of property and liability events.

There are also a growing number of casualty claims stemming from traditional property claims. While there have been relatively few events, those that have occurred show an upward trend in claims, especially wildfires and floods. For example, the California wild fires of 2007 resulted in a more- than-USD 1 billion casualty loss, and the Victorian brush fire in 2009 resulted in a casualty loss in excess of USD 500 million. Over the past 10 years, with the exception of pharmaceutical mass tort product liability and financial institution losses, many of the largest claims originated from major property events. Key drivers for the increase in casualty claims from property lines include the increased frequency and severity of catastrophic events, a diminishing societal acceptance of "acts of God", more transparency through media, and increased scrutiny by shareholders, analysts and auditors.[14]

[12] "Casualty Catastrophe Implications of the Deepwater Horizon Oil Release Disaster," GCCapitalIdeas, (27 October 2010), http://www.gccapitalideas.com/2010/10/27/casualty-catastrophe-implications-of-the-deepwater-horizon-oil-release-disaster/

[13] IPO laddering is the of tying IPO allocations of common stock to agreements to purchase additional shares at higher prices after the IPO. This process drives up share prices above their fundamental values and is illegal under the laws against market manipulation and fraud.

[14] Stevens, Jennifer and Daniel Knuesli, "Property Events Create Emerging Risks for Casualty Insurers," Carrier Management (18 May 2014), http://www.carriermanagement.com/features/2014/05/18/123020.htm?bypass=7176d5736b87e44f7040689f86c71ab9

Long-tail losses can occur as claims develop after many years, such as in construction or product defaults.

Catastrophic losses can also occur from long latency claims, especially those in which new damage causes may be discovered after many years of writing the same business, such as in construction or product defect claims. For example, the danger of asbestos has haunted insurers for many decades as plaintiffs have discovered new legal channels for claims. The "next asbestos" could stem from a variety of risks: nanotechnology, hydrofracking, risk accumulation in the food production and processing chain, or from the broad scope of environmental risks.[15]

The use of hydrofracking techniques raises concerns about a variety of environmental and catastrophe risks.

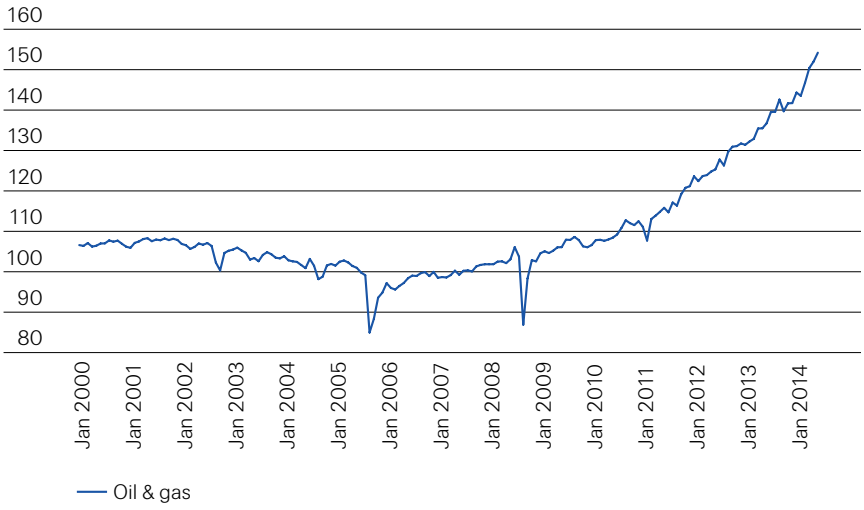
Hydrofracking: drilling and risk awareness are expanding

Hydraulic fracturing (hydrofracking) is an oil and natural gas extraction and production technique in which a mixture of water, sand and chemicals are injected into deep wells under high pressure to fracture shale rock formations in order to increase the efficiency of releasing oil and gas. Energy firms engaged in hydro-fracking face an array of risks, ranging from environmental liability litigation to regulatory uncertainties. Potential environmental risks include contamination of groundwater with fracking fluid or methane gas, air pollution from methane emissions at well sites and fumes from drilling equipment, and accidental wastewater spills. Energy companies are improving practices to enhance recycling the millions of gallons of "flowback" water produced by each well. If not recycled, fracking waste must be appropriately handled and disposed of in accordance with various laws and regulations. Deep well injection is a common disposal practice but also contains environmental exposure. This practice has also been linked to earthquakes in various locations.[16]

Drilling close to populated areas may be riskier.

Energy companies have used hydrofracking since the 1940s, but advances in drilling technology have created a boom in shale development in the past decade. Recently, hydraulic fracturing has been used in many thousands of wells across the US, leading to a boom in oil and gas extraction (Figure 10). This trend is expected to continue due to the demand for energy. A key location for this activity is the Marcellus shale, an underground formation that runs from southern New York through Pennsylvania, Ohio and West Virginia. Insurers generally view Marcellus shale drilling, often carried out close to towns and cities, as more challenging than operations conducted in less densely populated areas such as North Dakota and Texas.

Figure 10:
US Industrial production for oil and gas extraction, volume index (1997=100)



Source: Federal Reserve via Datastream

[15] Conning, "Liability and Tort Trends: Trouble Around the Corner?" (2012), Hartford.
[16] http://time.com/#84225/fracking-and-earthquake-link/

Some governments promote fracking, others ban or regulate it.

Hydrofracking is a global issue and governments remain divided on associated policies. Some countries have banned fracking altogether whereas others have favoured regulation over prohibition. In the US, fracking has generated public controversy and several lawsuits have already been filed. Many allege groundwater contamination, air quality problems, damage from seismic activity and others. In some cases, the allegations are specific to fracking and in others, the exposures are more broadly related to traditional oil and gas operations. Increasing pollution incidents or perceptions of water supply contamination could lead to additional lawsuits. This will likely trigger insurance coverage disputes – similar to those in previous pollution cases – over the applicability of pollution exclusions, the number of occurrences at sites with multiple wells and the allocation of losses. Suits alleging damages from fracking could entail long and complex legal proceedings. The potentially high cost of investigating and defending cases is another concern for insurers, in addition to possible judgments and settlements.

A related risk stems from the transport of oil by rail.

A related risk stems from the transport of the new abundance of oil. The increase has been too rapid for sufficient pipelines to be built, so the oil is often transported by rail. Carloads of crude have risen from 9,500 in 2008 to over 400 000 last year.[17] This has sometimes – as happened in Lac-Mégantic, Quebec, Canada in July 2013 – led to accidents with losses of lives and property. Currently, the US government is seeking to have the tank cars that transport oil upgraded to a higher safety standard to mitigate the risk of the cars breaking open and catching fire.

Regulation and auxiliary infrastructure are sources for additional liability risks.

Meanwhile, energy companies continue to adapt to tighter state and federal regulations. More regulation will expose companies to new causes of legal action for alleged failures to comply. Additional exposures faced by insurers that arise from fracking include the transport of oil by railroad, the construction of new pipelines and associated infrastructure to store and move oil and gas, and commercial auto exposure associated with large volumes of truck traffic during the fracking process.

Cyber risks are complex and spread rapidly

Global cybercrime costs are currently estimated to be in the range of USD 100-500 billion annually.

The global annual cost of cybercrime is estimated to be in the range of USD 100 billion to 500 billion.[18] A recent study showed rapid growth in not only the number of incidents, which reached 2,164 worldwide in 2013, but also in the number of exposed records, which reached 823 million, including the highest single incident of all time with 152 million records. The US accounted for 46% of incidents and 67% of exposed records.[19]

Only a small part of the costs of cybercrime are insured.

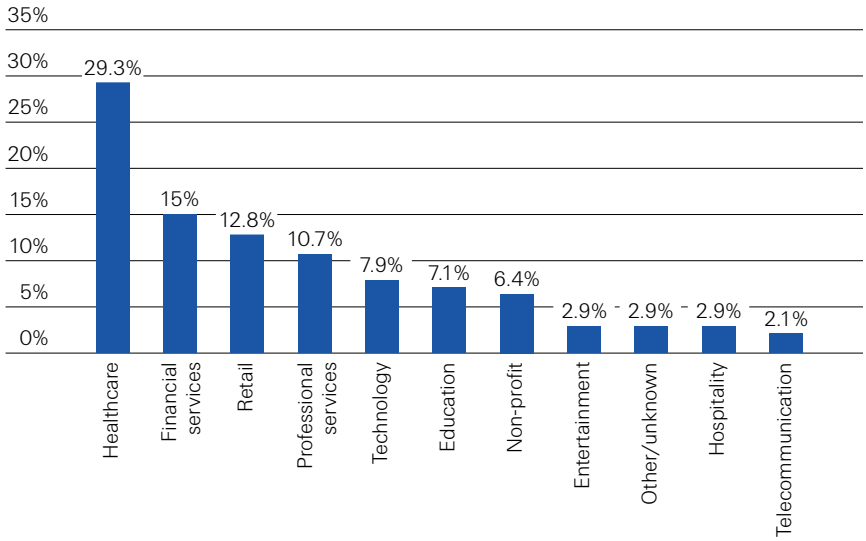
Only a small part of cybercrime cost is currently insured. Cyber insurance carriers offer a broad spectrum of policies that cover liabilities related to potential breaches and attacks. Many insurance firms have been reluctant to cover risks from cyber events, which include reputational damage, infringement of intellectual property and the value of data itself.

The market for cyber insurance has grown rapidly. Premiums in the US market alone were estimated to be USD 1.3 billion in 2013.

The demand for cyber insurance is expected to continue to grow robustly, due to the increasing incidence of cyber security breaches and as businesses gradually become more aware that traditional commercial policies do not adequately cover the risks. The US market is estimated to have had USD 1.3 billion of premiums in 2013. The US has been at the forefront of the cyber insurance market, driven by a high interest in data protection and the development of related laws and regulations, particularly data breach notification laws. In Europe, market participants expect similar developments as in the US.[20] Although the market began with products designed for specific industries, such as financial institutions and IT companies, demand is now increasing in non-technology industries.

[17] Robert Wright (23 July2014), "US oil groups ordered to renew railcars", Financial Times.
[18] McAffee (2013), "The Economic Impact of Cybercrime and Cyber Espionage".
[19] "Data Breach QuickView: An Executive's Guide to 2013 Data Breach Trends" (February 2014), Risk Based Security: https://www.riskbasedsecurity.com/reports/2013-DataBreachQuickView.pdf
[20] Zeitschrift für Versicherungswesen 10/2014, p. 293

Figure 11:
Number of cyber claims worldwide by industry in 2013, % of total claims



Source: NetDiligence 2013 Cyber Liability and Data Breach Insurance

Cyber policies span first- and third-party risks.

Cyber liability is best broken down into first- and third-party damages, including liability for cyber or security breaches. First-party losses to the insured include the costs associated with security breaches. They can come from customer notification, customer support and credit monitoring costs, the costs of restoring, updating or replacing the lost assets stored electronically, business interruption, the costs associated with libel, slander, copyright infringement, product disparagement and even cyber extortion/cyber terrorism. Third-party liability insurance covers the policyholder's responsibility to third parties – including customers, vendors and governmental agencies – stemming from a data breach or cyber-attack. Available third-party covers include litigation and regulatory costs, notification costs, crisis management and credit monitoring costs, media liability and privacy liability.[21]

The definitions of cyber risks are continuously evolving.

The definition of cyber risk is continuously evolving and the current policy landscape varies widely. While coverage of third-party information such as personal identifiers is more straightforward and easier to quantify, the insurability of first-party losses, such as intellectual property theft from cyber espionage, is much less clear. Cyber risks also have overlaps between casualty and property risks, since insureds may demand coverage for losses such as computer replacement. Policies differ by industry, since business-to-consumer or business-to-business industries are exposed to different costs of caring for customer or client information. The mixture of different underwriting specialties may give a competitive advantage to larger carriers that have in-house expertise in many areas. Claims history is currently still minimal but the development of claims experience will allow trend analysis, which may lead to more convergence of cyber policies in the future.

Class action litigation drives US demand, while European and Asian firms are more concerned about business interruption.

There are considerable regional differences in cyber risks coverage. In the US, the class action litigation system drives demand, while European and Asian companies are more concerned about the first-party risks of reputational damage and business interruption costs from data breaches. There has been a surge in cyber attacks and growing public awareness, and the recent rise in cyber-related litigation is only expected to increase.

[21] http://www.mondaq.com/unitedstates/x/267482/Insurance/A+Buyers+Guide+To+Cyber+Insurance.

In the US, SEC guidance on disclosure and state laws will drive demand for D&O cover.

Legal, regulatory and government or trade association developments are key drivers for the improvement in awareness and transparency of risks, but also for higher standards and requirements for cyber security and data protection. In the US, the 2011 Securities and Exchange Commission (SEC) issued guidelines for data breach disclosure, setting the responsibility standards for all publicly-listed US companies. Insurance was included as one of the five areas businesses may describe in disclosing their risk factors.[22] Recent high profile retail data breaches have heightened directors' and officers' awareness of their responsibilities. In the US in 2013, the National Institutes of Standards and Technology provided companies with international best practices. Even so, the statutory language describing each data breach law's application varies widely from state to state, in some cases detailing those who must comply in general, and in others, in more specific terms.[23]

Governments can play a key role in introducing risk mitigation and best practices to combat cybercrime.

Beyond regulation and information, governments can also play an important role in raising risk awareness and supporting private insurers. Intense cooperation is needed across sectors to achieve better cyber security and risk management practices. Both governments and industry are important players in introducing appropriate risk mitigation measures and practices. International collaboration will also help since cyber-attack activities are frequently global. The insurance industry can contribute risk awareness and promote dialogue with governments and across industries, allowing a better understanding of cyber risk and enhancing insurability.

Autonomous cars: legal issues lag technological progress

Autonomous car technology is rapidly evolving, but liability issues remain unsolved.

Ever since cars became a standard accessory for middle-class families in advanced economies, people have tried to imagine a world of self-driving vehicles. Apart from the technological challenges – a cost-efficient mass product has yet to be developed, – and uncertain public acceptance, driverless cars would have significant implications for the legal and insurance sectors alike, in particular regarding product liability and traffic laws.

Regulation would need to adapt if cars become highly autonomous.

Regulation would need to be adapted for highly autonomous cars, because car certification and new standards definitions would incorporate new features (eg, car-to-car communication devices, the installation of black boxes etc). Drivers/operators would likely need training, new driving licenses and certification in autonomous vehicle operation.

Manufacturer liability is likely to increase, while personal liability will decrease.

At present in most countries, the primary liability for an accident rests with the car driver or operator, backed by a mandatory liability policy, with the possibility of recourse to the car manufacturer or garage in case of vehicle malfunction. With the shift of vehicle control, either fully or partially, from a human to the vehicle or its built-in software, the liability rules would shift. In the case of a robot car, the car producer or the software designer (and their insurer) could become primarily liable, with the possibility of recourse to the driver/operator in case of negligence.

If a vehicle and a human share driving responsibility, the insurance issues could become more complicated.

For highly autonomous cars, there could be shared liability between the driver and car manufacturer. How this form of liability eventually takes shape is under discussion. It could be a joint, several (proportional), or joint and several liability.[24]

[22] "Insurance seen as key to cyber security standards", PoliticoPro (15 May 2014).

[23] "The Status of Data Breach Notification Laws in the United States," http://www.propertycasualty360.com/2014/05/23/the-status-of-data-breach-notification-laws-in-the?eNL=537f8a03150ba0ee2a0b8efc&utm_source=PC360DailyeNews&utm_medium=eNL&utm_campaign=PC360_eNLs&t=commercial-business&_LID=143379561

[24] Under joint and several liability, the litigant lets the sued parties sort out how they will fulfil the obligation. Also, see footnote 7.

Heterogeneous international regulations complicate the development of a consistent cross-border legal framework.

Additionally, to maintain cross-border traffic international co-ordination and co-operation will be required. One step in this direction is a recently proposed amendment of the UN Vienna convention by the UN Working Party on Road Traffic which would allow self-driving cars as long as the system "can be overridden or switched off by the driver". In the US, which has not signed the UN convention, four states and D.C have successfully enacted laws addressing autonomous vehicles.[25]

Vehicles are increasingly autonomous, but fully autonomous vehicles are still many years away from becoming reality.

Already today, modern high-end cars include advanced driver assistance systems such as automatic parking, lane departure warnings, adaptive cruise control and other electronic aids. This is called partial autonomy, where the driver is expected to be attentive at all times and can take back control instantaneously when required. The industry is working on creating highly and fully autonomous cars, where vehicles are able to operate autonomously for parts of or for the entire journey. The ultimate goal is to develop fully autonomous or robot cars that do not require drivers such as, for instance, the recently introduced driverless car prototype by Google.[26]

The dissemination of Advanced Driver Assistance Systems will reduce motor claims frequency.

It will probably take decades for robot cars to gain a significant market share, but the incremental increase of Advanced Driver Assistance Systems (ADAS) and other safety features will have a substantial impact on road safety. The frequency of road accidents has decreased due to a mixture of political efforts and improved safety technologies. In Europe, the share of motor of total non-life premiums has fallen from 39% in 2000 to 34% in 2012, because of a decline in the frequency of road accidents.

A long-term shift from personal lines liability to producer liability will have significant implications for providers of motor insurance.

As road safety continues to improve, the share of motor premiums is expected to decline to below 30% of the total by 2020. Automated and robot cars could push the share much lower. Insurance companies focused on personal lines will need new business models because in many markets, motor insurance is the gateway to other insurance contracts.

The effects of tort reform in the US and Australia are unclear

Tort reform in the US and Australia is likely to have contributed to a slowdown in claims growth in the mid-2000s.

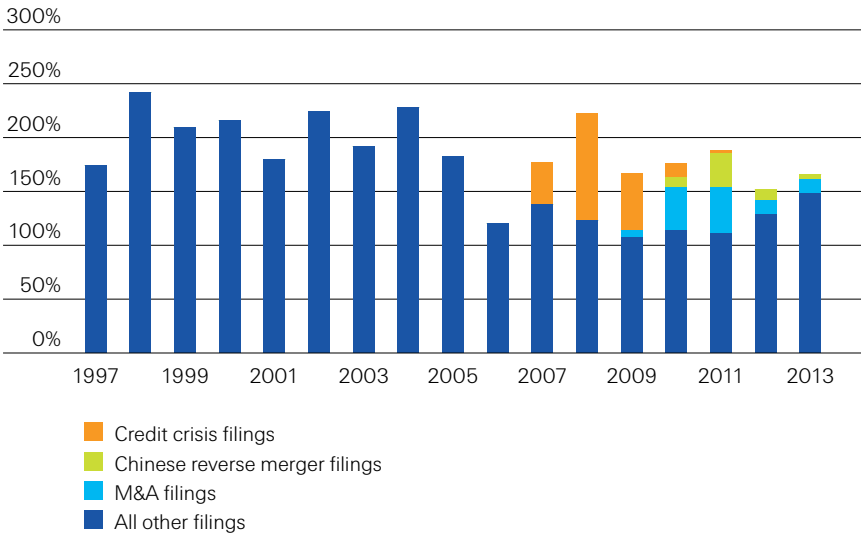
Significant tort reform measures in the 2000s in the US and in Australia are believed to have contributed to a moderation in claims frequency and severity in those countries. Often these types of reform have only a temporary effect on claims growth, which fades as the rules eventually soften again or the legal profession learns how to optimize the pursuit of claims in the new framework.

Tort reform in the US has focused on medical malpractice and class action claims.

US tort reform initiatives are mostly implemented at state level and have focused primarily on limiting lawyers' fees and non-economic compensation, including punitive damages. Many early studies concluded that these reforms were effective in reducing medical malpractice liability.[27] Some of these caps were later overturned by state supreme courts. Other initiatives have attempted to limit mass tort litigation at the federal level. The most significant step was the "The Class Action Fairness Act" of 2003. This act transferred large interstate class action lawsuits to federal courts, reducing the opportunity for "forum shopping" by plaintiffs' attorneys.

[25] Gabriel Weiner and Bryant Walker Smith, "Automated Driving: Legislative and Regulatory Action", cyberlaw.stanford.edu/wiki/index.php/Automated_Driving:_Legislative_and_Regulatory_Action.
[26] http://googleblog.blogspot.ch/2014/05/just-press-go-designing-self-driving.html.
[27] Sea a summary in Eisenberg, Theodore, "The empirical effects on tort reform" (2012), Cornell Legal Studies Research Paper No. 12–26.

Figure 12:
Annual number of US securities federal class actions



Source: "2013 Securities Class Action Year in Review," Cornerstone Research

The empirical evidence on the effects of federal class action reform remains inconclusive.

From 2002 to 2006, the number of US federal class actions fell. This was partially due to the strong performance of the economy and a consequent low number of corporate failures (a prime driver of securities litigations). Between 2007 and 2010, the credit crisis triggered a wave of class actions. And, after 2010, there was a wave of cases related to merger and acquisition (M&A) activity and "Chinese reverse takeovers," but this has subsided recently. The longer term effect of these class action reforms remains unclear.

Australia went through a "liability crisis" in the late 1990s with soaring claims.

In Australia, in the past two decades liability lines have been reshaped by tort reform. Prior to 2001, combined operating ratios for both public and product liability and professional indemnity and directors' and officers' (PIDO) increased steadily to over 150%. Sharply rising liability claims and the 2001 collapse of HIH, the second largest insurance company in Australia, led to concerns about rising insurance premiums and the availability of liability cover. An Australian government committee released a report on "the Law of Negligence" called the "Ipp Report" in September 2002, with recommendations for legislative actions.

Tort reform was implemented by Australian states, leading to more moderate claims growth.

While the original goal of passing a national law failed, a majority of the states and territories implemented most of the recommendations through a combination of amendments to existing laws or the introduction of new legislation. The reform consisted of measures to narrow the scope of the potential liability, to reduce the damages which may be awarded and to introduce upper and lower limits for loss of earnings indemnifications and pain and suffering awards. In the post-tort reform "honeymoon period" from 2003-08, there was immediate relief and combined ratios dropped below 80%, while reserves releases contributed significantly to improved profitability. Since 2009, the last year of reserves releases, combined ratios have fluctuated between 80% and 120% for public and product liability, and 70% and 100% for PIDO.[28]

[28] "APRA GI Statistics – Spotlight on Long Tail" (August 2013), D'finitive.

The initial benefits of tort reform in Australia have been offset by a rise in class actions.

Though tort reform has curbed individual claims severity, class action suits are increasing. Class actions are entrenched in Australia's litigation culture and are used in increasingly diverse and sophisticated ways. In 2012, total settlements were a record AUD 480 million, including the landmark AUD 200 million settlement in the Centro class action, which took total Australian securities class action settlements to more than AUD 1 billion over the past 20 years.[29] With some of the largest-yet natural disaster and public liability class actions still due for trial, as well as rulings on the ability of companies and directors to have recourse to D&O insurance proceeds ahead of class action claimants, it appears class action suits will increase claims growth in the future, permanently altering the risk profile of Australian firms.

Litigation funding is a driver of the growth of class actions in some countries such as in Australia and Canada.

Third-party litigation funding is spreading

Litigation funding, in which a third-party funding company pays the costs of litigation and is paid only if the litigation is successful, allows the plaintiff(s) to litigate without having to pay. It has become a significant part of the class action litigation landscape in some jurisdictions, most notably in Australia, where a third-party litigation finance industry has matured over two decades, boosting securities and product liability litigation. Litigation funding has been available in England and Wales for a decade and is also gaining judicial acceptance in Canada in connection with securities class actions.

Australia has the most developed litigation funding industry in the world.

Litigation funding pays plaintiffs' costs and any legal costs awarded to defendants (including providing security against adverse court orders). Courts have recognized that litigation funding can promote access to justice for some types of claims. On the other hand, the profitability of litigation funding has also fostered successful companies since funders can receive up to 50% of the compensation awarded to plaintiffs. The profits have attracted new funders into the market, who could drive more class action litigation as they compete for market share.[30]

Litigation funding promotes access for plaintiffs to mass tort claims.

The regulation of litigation funding is a hot topic in Australia, as new legislation has begun to re-define the licensing and conflict of interest requirements for litigation funding. In the US, litigation finance is in its infancy but developing. There are fears it will grow, driving up litigation and future claims costs for insurers. Third-party funding complements the traditional funding and risk transfer of legal expenses in the US, where defendants are backed by their liability insurers and plaintiffs are backed by contingency-fee lawyers who underwrite promising cases. The availability of outside funding may encourage more parties to pursue their claims.[31]

In Europe, there is a trend to increasing consumer access to justice via collective redress.

Growing scope of collective redress in Europe

The European Union (EU) has been pursuing its policy goals by expanding liability rules. Some past directives were designed to introduce new areas of liability, increase limits and/or require mandatory liability insurance. In 2013, the European Commission recommended a common set of principles regarding collective redress (mass tort) in several areas.[32] The proposal differs from the US system by establishing a need to opt in, eliminating punitive damages and contingency fees.

[29] The Centro class action suit was brought against two Centro companies and their auditors. The suit alleged that in 2007 Centro had failed to fully disclose its debt obligations.
[30] For a general discussion of the topic, see Geoffrey McGovern et. al, "Third-Party Litigation Funding and Claim Transfer" (2010), RAND Institute for Civil Justice, Conference Proceedings.
[31] Press release (27 November 2008), http://europa.eu/rapid/press-release_IP-08-1800_en.htm.
[32] Ibid.

Collective redress is still in its infancy in the EU.

To date, only a few EU member states have introduced collective redress mechanisms, mostly focused on a very narrow scope of situations. In Germany, collective redress is only applicable to capital market-related legal disputes ("KapMuG"). In France, the recently enacted Law on Consumer Protection (Loi Hamon) introduced compensatory group actions to national legislation. It allows national consumer associations (and only them) to act on behalf of consumers suffering identical or similar material damages caused by the same defendant.[33]

The EU Commission provides guidelines rather than a set of rules.

The EU Commission is not aiming for centralised legalisation, but for a "horizontal framework" without a full alignment of member states' systems.[34] It recommends a number of principles to ensure a coherent approach to collective redress in the EU and to protect the procedural rights of the parties. In order to avoid abusive litigation, member states should:

- Avoid contingency fees for lawyers. In other words, the "loser pays" principle should also form part of the collective redress cases.
- Avoid punitive damages, as the punishment and deterrence functions should be exercised by public enforcement, not by civil law disputes.
- Avoid opt-out approaches. In other words, a claimant group may only include members who actively decide to participate (opt-in). Exceptions to this principle should be duly justified.

Although the EU Commission may one day decide to pass a formal directive on the topic, these recommendations issued in 2013 are not binding for member states, and changes to national laws would be necessary to affect litigation trends.

Can the policy goal be achieved without creating an over-sized class action culture?

There is a clear trend to enforce and empower consumers and to facilitate collective action in litigation cases in Europe. However, the EU litigation culture and policy objectives differ substantially from those of the US. For instance, alternative dispute resolution based on out-of-court settlement is explicitly encouraged. Still, as the current recommendations are not binding, there is ample opportunity for different national standards, something the insurance industry must carefully monitor.

[33] http://www.lifescienceslegalupdate.com/2014/06/articles/international-life-sciences/eme-life-sciences/french-class-actions-how-potentially-dangerous-will-they-be/

[34] The transfer is based on a form of 'soft law' and is therefore not enforceable. It is based on "best practice" and mutual recognition (Wikipedia).

How are liability insurers reacting?

Dealing with emerging liability risks

Insurers will use new tools to make risks more insurable and to improve pricing.

Evolving liability risks call for innovation in products and underwriting techniques. Insurers will be using new tools – Big Data, predictive and forward-looking modelling, and data analytics – to make risks more insurable and accurately priced.

Product innovation is necessary to adapt policies to technological and regulatory changes.

Product innovation

Liability insurers have always faced the need to innovate their product in response to the changes created by new technology, changes in risk awareness and acceptance by the public, new legislation passed by parliaments and new case law created by court systems. Historical challenges requiring adaptation in the US include the D&O liability securities laws in the 1960s, the liability crisis of the mid-1980s, landmark legal cases in the mid-1990s, the Private Securities Litigation Reform Act of 1995, the Sarbanes Oxley Act of 2002 and the Dodd-Frank Act from 2010, as well as anti-discrimination and civil rights acts. In Europe, the challenges have mostly been from laws or directives, such as the German Environmental Liability Law of 1991, the European Environmental Liability Directive of 2007, and the European Economic Community's Product Liability Directive of 1985. In each of these cases, the insurance industry has changed its product mix, adjusted its pricing or introduced new terms and conditions that limit a company's or individual's liability, so making the risk insurable.

Cyber, environmental and nanotechnology risks require new products and specialized underwriting.

There are many new products (or adaptations) in the near and long-term pipeline. Some examples are:

- Cyber insurance continues to evolve such as with privacy cover endorsements, loss prevention and loss control features, and combinations of first- and third-party risks.
- Frequent changes in environmental legislation and regulation worldwide drive product innovation, addressing environmental liabilities either from past activities on the site or future actions, or compensating for the mandatory restoration of environmental damages or biodiversity.
- Specific covers for producers of nanotechnology products have been introduced combining general, product, pollution and product recall liabilities, and first-party exposures.

Technological developments will facilitate product innovation in liability insurance.

Technology will play a big part in facilitating innovation in insurance. Until now the most significant improvements have been in process or distribution innovations,[35] but technology can influence product innovation also. The phenomenon of technology combining innovations in distribution, underwriting and product design is often associated with the concept of Big Data.

Underwriting quality is key

Successful insurers have outperformed through underwriting expertise.

Against a backdrop of rising claims trends, a deceleration in price increases and little improvement in investment income, insurers will look to grow profitability through better underwriting risk selection. Underwriting is the key success driver of commercial liability insurance and protects against commoditization. The most successful commercial insurers achieve above-average profitability through lower loss ratios. Lower expense ratios and higher investment returns are important, but secondary, success factors. Significant and persistent performance differences among commercial insurers point to the importance of underwriting.

[35] See Swiss Re, *sigma* 2/2014, "Digital distribution in insurance: a quiet revolution".

Availability and quality of data is a key ingredient for successful underwriting.

One structural challenge for data analysis of liability risks is the limited availability of quality data on civil liability activity. Data on case filings are often spread across various sources. Most cases get settled out of court and details are therefore not covered by official sources. There is also a long time lag between filing and settlement and, in many significant cases, the claims awards are not final and may be overturned on appeal. The next difficulty arises in trying to identify the insured versus uninsured parts of an award. Due to the moral hazard associated with the deep pockets of insurers, details on settlement are kept private. Private research firms collect information on awards from voluntary submissions but the data is incomplete, is biased toward large claims, and is skewed to cases won by plaintiffs.

Insurers must monitor the evolving environment. Changes can lead to casualty risk accumulation.

Compared to natural catastrophes, which are covered by increasingly sophisticated models, casualty catastrophes are more difficult to model. The constantly changing legal and business environment limits the availability and usefulness of historic data for analysing future trends. Legal changes sometimes have a retroactive effect, making modelling even more difficult. Insurers must vigilantly monitor emerging risks with potentially long latency. For instance, new chemical substances in foods, pharmaceuticals or building materials may have a cumulative toxic or disease effect that is only discovered in the distant future.

New techniques such as forward-looking modelling and software to analyse risk accumulation, are becoming essential in the pricing of liability risks.

New techniques and technologies are being employed to improve underwriting. For example, there are new software programs to analyse potential areas of risk accumulation. Also, forward-looking modelling, which uses factors other than historical claims, is critical for improving underwriting quality in liability insurance. The aim is to find new variables or combinations of variables that give a window on future risks and costs. Such forward-looking models will help insurers guide their clients towards more efficient transfer of their insurable risks.

Behavioural biases in underwriting: implications for insurers

Biases could creep into underwriting decisions if behaviours affect pricing and risk selection.

The decision-making biases studied by behavioural economics may also apply to underwriting decisions. Theories of cognitive bias explain decision making in terms of heuristics – mental shortcuts, based on "rules of thumb" – which allow humans to make rapid decisions based on limited information. While such heuristics can increase the speed of decision making, they can also introduce severe and systematic errors. Although economists have studied risk taking in personal and corporate finance, insurers are only just starting to consider the impact of cognitive bias on their business (see Table 6).

Casualty underwriting may be particularly susceptible to cognitive biases.

It may not be possible to fully "switch-off" biases, and it may not always be beneficial to do so. However, recognizing that biases exist and understanding how they affect decision making helps underwriters counter their potentially negative impacts. This is particularly relevant for casualty underwriters due to issues of parameter uncertainty, asymmetric information (in which the insured may know more about the risk than the insurer), and long-tail business.

Table 6:
Behavioural tendencies and their potential impact on casualty underwriting

Bias	Description of bias	Examples of the potential impact in casualty lines of business
Anchoring	The tendency to rely too heavily on, or "anchor," one trait or piece of information.	On commercial business, an underwriter might "anchor" to the broker's price expectations or to the previous year's price.
Availability heuristic	The tendency to overestimate the likelihood of events with greater "availability" in memory.	Underwriters might avoid professional and management liability covers given recent negative experiences and adverse press coverage. This has contributed to professional and management liability lines being popularly viewed as toxic.
Framing effect	Drawing different conclusions from the same information, depending on how or by whom that information is presented.	The framing effect could be particularly significant when underwriters consider a new risk, because other information is often limited. For example, with a start-up company or a new technology like telematics, the eye-catching appearance and granularity of data may lead underwriters to consider un-tested material.
Sunk-cost effect	Justifying investment, based on prior investment, despite new evidence that the decision was probably wrong.	As writers of long-tail business, a significant challenge for casualty underwriters is knowing how to distinguish between a "blip" and a "trend". Does a downturn in a casualty line of business reflect a short-term deterioration (perhaps a temporary rise in claims frequency for a specific reason), or is it the start of a longer-term decline (perhaps for structural reasons such as a change in the legal environment)?
Confirmation bias	The tendency to search for, remember or interpret information that confirms one's own opinions.	A significant loss experience can influence an underwriter's assessment of similar risks in the future. For instance, an underwriter who insured a roofing contractor whose hot work started a fire which spread and destroyed a neighbouring building, could become overly conservative in writing similar risks with future contractors who request a heat work permit. Confirmation bias highlights the difficulty of differentiating "experience" from "bias".
Normalcy bias	The tendency to underestimate the possibility of a rare event.	When rating motor fleet business, it is common for underwriters to use loss experience, while exposure rating typically plays a relatively minor role in the costing process. The claims experience of the fleet therefore becomes the "normal" loss expectation. However, over-reliance on this can lead an underwriter to underestimate the possibility of large losses, particularly claims involving severe bodily injury (which may be infrequent but large).

Source: Swiss Re Casualty Products

Big Data, predictive modelling, and forward-looking modelling

Predictive and forward-looking modelling can improve the understanding of key risk drivers.

With predictive and forward-looking models, insurers can perform statistical analysis to better understand the key drivers of risks. While predictive models can anticipate future outcomes under relatively stable conditions, forward-looking models reflect the cause-effect chain of liability losses, allowing for complex relationships between observable risk drivers of claims frequency and severity, often using a scenario-based approach.[36]

Insurers now have more data available than ever before.

Such models rely on data volume and quality to estimate patterns. New data sources can enhance models, giving insurers information on trends completely outside the traditionally available data sets. Insurance companies can now combine client, in-house and third-party data from sources such as internet browsing histories, submission data, e-mail and meeting minutes, claims files, usage-based insurance devices and social media.

[36] Forward-looking models thus allow for findings to be transferred from contexts where data is plentiful to those where it is sparse, such as emerging markets or low-frequency events.

How are liability insurers reacting?

The use of Big Data and predictive modelling in commercial lines is increasing.

For commercial lines, the use of Big Data and predictive modelling is nascent but increasing. In a recent US survey, nearly half of workers' compensation writers had adopted some form of predictive modelling by 2013, up from 38% in 2012. In general liability, a third of the survey respondents used predictive modelling in 2013, up 7 points over the prior year.[37] Industry participants and consulting firms have used predictive models to manage D&O portfolios, given the availability of class action lawsuit and correlated financial data.[38] Many commercial fleets already use telematics devices to track the movement of vehicles and cargo. Ever-smaller tracking devices and nanotechnology could allow such data collection to extend to insurance for chemical and pharmaceutical industries, for example.

Model analytics can also be used to improve fraud detection.

Model analytics can also improve fraud detection. Combing data from different sources, predictive modelling can identify suspicious behaviour and reduce information asymmetry, thus helping curb claims.[39]

[37] Towers Watson, "2013 Predictive Modeling Benchmarking Survey" (March 2014), Insights.
[38] Seth Rachlin, "A Perfect Match: Big Data & the Corporate Risk Manager" (30 April 2014), propertycasualty360. See for example "Guy Carpenter Unveils Model for Analyzing U.S. Publicly Traded D&O Liability Risks" (12 February 2004), Insurance Journal; Advisen, "Using Value Investing Measures as Predictors of Lawsuits: Advisen's Value Risk Tools" (September 2008).
[39] Bill Kenealy, "More claims professionals are using predictive modelling" (September 2008), Business Insurance.

Conclusions

Underwriting expertise is a key competitive advantage, which can hinder new entrants.

Liability insurance is challenging to underwrite because of its long-tail characteristics and its dependence on the interaction of a number of factors that are difficult to monitor and predict. These factors include macroeconomic developments, globalisation, risk accumulation, the changing industrial landscape, capital market developments, new technologies, medical progress, and dynamic societal and legal developments. Underwriting expertise is a competitive advantage, requiring more experienced insurers to deal with the complexity of the market.

With product innovation, insurers can stretch the boundaries of insurability to meet the demands of the changing risk landscape.

Product innovation and Big Data can help meet demand for some new risk exposures for targeted covers. It can also make insurance viable for challenging-to-insure risks currently underserved by insurers. However, successful innovation requires a culture that fosters experimentation and accepts failure during the design process. The key is to harness the insights from data, analytics and technology to improve risk selection and pricing, and to bolster the consumer-centricity of insurers' products and services.

International strength is important to support clients in a global economy.

Many large corporations operate globally and are exposed to different liability regimes via export or foreign operations. Insurers must be able to service and support their clients relative to their international exposure. They must be able to offer a wide range of product standards within a diverse spectrum of regulatory and litigation frameworks. Global insurance companies must maintain their footprint directly or through partners in most of the major countries.

Strong capitalization is an essential part of the value proposition to insurance buyers, particularly for the long-tail casualty lines.

Given that casualty lines are long-tailed, and thus subject to a large degree of uncertainty over the ultimate claims payments, a strong capital base is essential for insurers writing casualty business. Extreme risk scenarios are often correlated and equity capital provides the buffer for these unforeseen loss events. The value of risk transfer is highest in times of financial or economic crisis. Risk transfer via reinsurance – in lieu of balance sheet capital – is another option for dealing with extreme risk events.

Appendix

Main lines of commercial liability insurance covered in this *sigma*

Commercial general liability (CGL)	CGL policies provide cover against the legal liability exposures of a business, unless specifically excluded. CGL typically includes legal defence costs which need to be borne by the defending party, even if a case is won or settled. For small businesses not exposed to specific risks, multi-line contracts including property risks are available. In some markets, these policies are called public liability. They mostly do not include legal defence costs. General liability is classified into different sub-categories of liability insurance as below.[40]
Excess liability, umbrella	Excess liability insurance supplements a firm's underlying policies such as general, motor and employers' liability, and is triggered when the limits of the underlying insurance have been exhausted. Terms and conditions usually follow the underlying primary policies provisions. Umbrella covers can be broader than the underlying policies, but typically also includes some self-retention of risks. Higher limits can be added ("layering") to the lead umbrella cover. Umbrella covers are typically seen in the US and are generally not used in European or Asian markets.
Environmental impairment liability	Cover for liability and sometimes clean-up costs of environmental pollution/ damage.
Product liability	Cover for the losses originating from defects in concept, design, manufacture or storage of a product, or from improper use by the consumer. Product liability is increasingly complemented by special statutory regulations aimed at ensuring product safety for the entire lifecycle of the product, standards the manufacturer must comply with.
Product recall and product integrity	Insurance to cover the expenses incurred by a recall of faulty products. Manufacturers are incentivised to recall early so as to contain the potential claims from other product failures.
Professional liability or errors and omissions	Customised insurance products for professional services companies (eg, accounting, banks, engineers lawyers, architects etc.) to cover claims for damages based on violations of the duty to exercise care and prudence, or failure to follow state-of-the-art or other generally applicable professional standards and practices. In healthcare, a special form of professional indemnity is **medical malpractice** insurance (particularly important in the US). Another example of specialized cover is **décennale** (or decennial) liability in France, a mandatory cover for all trades in the construction sector (architects, builders and technicians etc).[41]
Directors' & officers' insurance (D&O)	Covers the consequences of violations of the duty to exercise care on the part of the members of the board of directors, supervisory boards or management of legal entities. For listed companies, D&O can offer cover against certain claims from shareholders.

Source: Swiss Re Economic Research & Consulting

[40] The US market has the broadest scope of liability covers. Elsewhere, some of the covers are integrated into general liability policies, This reflects in the market data of each country.

[41] Unusually, décennale cover continues to run even if the insured has died or is liquidated.

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