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**Motor Third-Party Liability Insurance
in Developing Countries**

*Raising Awareness and
Improving Safety*

Motor Third-Party Liability Insurance in Developing Countries

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Improving Safety*

Edited by

Serap O. Gönülal

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In memory of my beloved brother

M. Fırat Ođuz

who endured his suffering with a smile

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CHAPTER 1

Introduction

Serap O. Gönülal

Motor insurance is probably the most important type of insurance sold in developing countries and may be the first class of insurance with which the general public has an acquaintance. In most countries, motor third-party liability (MTPL) insurance is compulsory in order to protect the public. World Bank studies in Africa, Central Asia, and Europe have shown that motor insurance premiums represent at least 30 percent of all non-life premium income (see table 1.1). This phenomenon may be explained by the rapid rise of motor fleets. MTPL insurance has been introduced in the formerly centrally planned economies only in the past decade, and it is poorly understood. Motorists are inclined to view it as a form of tax that they are at liberty to evade, rather than as a protection against their personal liability, a concept that is not familiar to the general public.

According to the first major report on road injury prevention jointly issued by the World Health Organization (WHO) and the World Bank, road traffic injuries are a huge public health and development problem, killing almost 1.2 million people a year and injuring or disabling between 20 million and 50 million more. Both WHO and World Bank data show that, without appropriate action, these injuries will rise dramatically by 2020, particularly

Table 1.1. Written Premiums in Select Countries, 2007 (€ millions unless otherwise noted)

Country	Motor premiums	Total non-life premiums	Ratio of motor to non-life premiums
<i>Balkans</i>			
Albania	34.22	42.96	80
Bulgaria	444.61	632.45	70
Croatia	516.92	786.15	66
Romania	1,234.71	1,675.24	74
Serbia	261.98	441.09	59
Montenegro	38.84	60.41	64
<i>Middle East</i>			
Algeria	258.59	529.79	49
Bahrain	84.78	165.76	51
Egypt, Arab Rep. of	106.42	402.54	26
Iran, Islamic Rep. of	1,196.62	1,666.21	72
Iraq ^a	5.12	11.53	44
Israel	1,178.92	1,954.39	60
Jordan	133.95	217.04	62
Kuwait ^b	118.33	296.82	40
Lebanon	101.62	213.03	48
Libya	35.52	113.58	31
Morocco ^a	484.09	851.04	57
Oman	128.53	260.24	49
Palestine	—	—	—
Qatar ^b	66.22	294.30	23
Saudi Arabia	475.73	1,011.98	47
Sudan ^b	87.29	151.31	58
Syria	82.13	130.54	63
Tunisia	223.60	369.52	61
Turkey	2,592.13	4,378.92	59
Yemen, Rep. of	13.84	41.56	33
<i>Central Asia</i>			
Afghanistan ^c	—	1.86	—
China ^b	10,151.32	19,185.62	53
Kazakhstan	93.41	870.47	11
Kyrgyzstan	—	3.00	—
Mongolia ^d	1.46	4.49	33
Tajikistan	—	19.53	—

(continued)

Table 1.1. Written Premiums in Select Countries, 2007 (continued)

Country	Motor premiums	Total non-life premiums	Ratio of motor to non-life premiums
Turkmenistan	3.79	18.71	20
Uzbekistan	—	43.56	—
<i>Africa</i>			
Congo, Dem. Rep. of	17.19	26.37	65
Congo, Rep. of	11.51	36.15	32
Kenya	145.34	270.42	54
Namibia	30.85	98.22	31
South Africa ^a	1,987.92	4,196.71	47

— Not available.

a. Preliminary data.

b. 2006.

c. 2003.

d. 2004.

in rapidly motorizing countries. Not only is 90 percent of the current burden already borne by low-income and middle-income countries, but the increase in casualty rates will be greatest in these countries. Although data on the costs of traffic accidents are sparse, particularly for low- and middle-income countries, these injuries clearly have an enormous economic impact on individuals, families, communities, and nations, costing countries between 1 and 2 percent of their gross national product. In addition, there is the heavy and tragic burden on those directly affected, physically and psychologically, as well as on their families, friends, and communities. According to the World Health Organization's 2004 *World Report on Road Traffic Injury Prevention*, health facilities and their often meager budgets are greatly overstretched in dealing with survivors of traffic accidents.

World Bank studies have shown that motor accidents causing deaths and injuries occur in developing countries at up to eight times the rate in industrial countries. To underline the seriousness of the situation, WHO has called motor accidents a "hidden epidemic." Reasons for the differences vary and may include differences in infrastructure, such as the quality of roads, average quality of vehicles, particularly with regard to safety features, or typical behavior behind the wheel (using seatbelts or drinking and driving).

In some countries, the insurance industry shares responsibility for preventing road injuries, and organizations funded by the insurance industry

make a valuable contribution to road safety. For example, Folksam in Sweden and the Insurance Institute for Highway Safety in the United States provide objective information about the crash performance of new cars and other safety issues. Data are collected by such groups as the Finnish Insurers' Fund and by TRAMER, the Turkish data collection system, both of which investigate every fatal crash occurring nationally, carry out safety studies, and provide information to the public.

Motor insurance has the potential to be a powerful tool in the promotion of personal responsibility. If communicated effectively, the link between the consequences of causing an accident and the economics of paying for those consequences will of itself gradually lead to improved driving. Many more developed economies work extensively with bonus-malus premium pricing, which has a dramatic effect on making the driver feel responsible for his or her own driving. In developing economies, this is rarely a practical option at the individual level, but price variations by type of vehicle (and perhaps by location) can play a valuable part in bringing home the principle of the "user pays." Similarly, compensation that reflects the behavior of the individual can be harnessed to improve behavior—if the system pays benefits on a no-fault basis, there is no incentive to wear a seatbelt.

Typically, guarantee funds are created to compensate persons who suffer bodily injury caused by hit-and-run drivers and to pay claims for property damage caused by uninsured motorists. Such funds have been recommended by the Organisation for Economic Co-operation and Development (OECD) and the European Union (EU). The main arguments in favor of and against insurance guarantee schemes typically revolve around their "moral hazard" and costs. Normally the guarantee schemes are financed by contributions, which are related to the premium income of the insurance companies. Roughly half of the states have mechanisms in place to permit the guarantee scheme to borrow or receive income from other sources. Generally the state does not finance or underwrite guarantee schemes, but in practice there is an implicit commitment to finding a solution that ensures that claims will be met.

World Bank financial sector assessments across many jurisdictions have consistently found problems in the MTPL sector. This book seeks to provide guidance regarding the various approaches that may be adopted to help

developing countries to increase the penetration and operational effectiveness of MTPL insurance and improve overall social welfare.

In light of the influence of MTPL in developing insurance markets, it is of utmost importance to gain the trust of the motoring public by developing a system that is seen to be transparent, efficient, and equitably run. Such a system would be free of unfair market practices and promote the timely settlement of claims. Also important are efforts to reduce the proportion of motorists who are uninsured, because their accidents are costly for the guarantee fund. No less important is the efficient collection of data. Reliable data can assist with processing claims, tracking uninsured motorists, pricing products fairly, and preventing fraud.

The main elements of MTPL can be summarized as follows:

- *Legal structure*, including systemic factors such as the role of the courts and torts, minimum cover, thresholds and limits (if any), whether the insurance goes with the car or its owner, the overall role of liability law, the workings of any tariff system, links to new registrations, and the role of the traffic police
- *Actuarial methodology*, including the foundations for establishing premium rates and for posting reserves to meet pending and future claims
- *Contingency reserving*, including the state guarantee fund
- *Claims management and information service*, including data collection, information-sharing mechanisms, and claims services
- *Reinsurance*, including the proper approaches to maximize the benefits of reinsurance, which should be tailored to the solvency requirements and financial standing of the particular insurer.

Following the introduction, this book focuses in more detail on specific aspects of MTPL systems, with reference to the experiences gained in both developed and developing markets.

First we supply some context to the issues by examining the existing practices. Chapter 2 discusses some aspects of the MTPL system, referring to the experiences of Brazil. The main focus is on the reform process, whereby Brazil sought to correct uninsured vehicle rates as high as 60 percent or more, and the structuring of the legal framework.

We then review some of the analytic methods that can be dynamic forces to strengthen the effective management of a good MTPL system. Chapter 3 explains the actuarial background of pricing and reinsurance, with emphasis on the foundations of rate making in MTPL insurance. Basic issues such as premium reserving and various approaches to claims reserving are covered.

The application of actuarial science can only be part of the solution. At a much more practical level, it is essential that any system addresses the twin problems of the risk of insurer insolvency and the presence of uninsured and unidentified drivers. Chapter 4 discusses contingency reserving and the guarantee fund structure. Issues like the mission, goal, and functions of these funds are covered thoroughly, as are the liability limits and coverage of these structures.

One means to diminish levels of uninsured driving is a high-quality central motor insurance database. This also helps to control the escalation of fraud. Chapter 5 focuses on the statistical work to be done in developing a database and the legal and organizational aspects with reference to the Turkish system.

A further factor in developing better motor risk management lies in the potential contribution of the police. Chapter 6 discusses the role of the police, particularly with regard to accidents and related procedures.

Managing a healthy insurance function will almost always turn on having a sound approach to making sure that insurance carriers are appropriately reinsured. Chapter 7 covers reinsurance, with a particular focus on the problems facing developing countries.

We then devote a further chapter to specific motor experience in a fast-developing country. Chapter 8 is allocated to policy issues in MTPL pricing based mainly on the Indian experience. The evolution of MTPL insurance in India is summarized with an emphasis on the effectiveness of the legal framework and the need to accommodate politically driven cross-subsidies. Other matters such as the calculation of pure risk premiums, actuarial variables, and applicable loading factors are also covered.

Many developing countries find it difficult to imagine the prospect of a free market in MTPL insurance. Since it is a compulsory purchase, its cost is readily seen in political terms. However, experience shows that a free market is the best way to generate efficiency in this field. Chapter 9 discusses how to move forward from prescribed tariffs to liberalization in MTPL insurance.

Chapter 10 discusses the key role of competition in making MTPL insurance operate more efficiently. There are rare examples where excellent MTPL systems operate with monopoly insurer providers, but by far the majority of monopoly arrangements are open to dynamic improvement. Competition is a powerful force for creating improvement, and many examples of innovations in efficiency are owed to the competitive principle. However, some issues such as road education and road design safety do not respond well to competition, so there is a need for some centrally managed activities.

As the scale of world trade increases, so does the extent of cross-border driving. The need to provide appropriate insurance coverage for out-of-territory exposures is a real issue in many countries. Chapter 11 covers multi-country MTPL systems, with particular reference to Europe. The role of the green card system and its equivalent in non-EU member countries is also discussed.

The concluding chapter derives the main results from the experiences of the countries covered, outlines some important features to guide future work in those countries, and underlines the importance of MTPL insurance for road safety and secure traffic systems.

Mobilization, whether for the private individual or for the commercial enterprise, is a powerful force for growth and development in all countries. Yet if poorly managed, it is also the cause of death, injury, and much dislocation. A crucial step in improving the world's "hidden epidemic" of motor death and injury is to make the driver fully aware of his or her responsibilities, and a crucial step in communicating those responsibilities is to develop a well-planned framework for motor liability insurance.

CHAPTER 2

The MTPL System in Brazil

Ricardo de Sá Acatauassú Xavier *

Brazil's system of motor third-party liability insurance (known as DPVAT insurance in Brazil) was established by law in 1974 and amended in 1992 and 2007.¹ All owners of automotive vehicles that are subject to registration and licensing under Brazilian traffic laws must obtain DPVAT insurance annually. DPVAT insurance is purchased at the same time as the annual vehicle license renewal, and the life of the coverage coincides with the calendar year. The operational aspects of the DPVAT insurance system are regulated primarily by the National Private Insurance Council (Conselho Nacional de Seguros Privados, CNSP) by means of resolutions published as a result of its periodic meetings. The system is also regulated by the Office of the Private

* The author would like to thank José Inácio Fucci and Luiz Pereira de Souza for their contributions to this chapter.

1. Articles 4, 5, 7, and 12 of the DPVAT Insurance Act (Law no. 6.194 of December 1974) was amended by Law no. 8.441 of 1992 and by Articles 3, 4, 5, and 11 of Law no. 11.482 of 2007. The more recent Provisional Measure no. 451 rewrote Articles 3, 5, and 12 of the DPVAT Insurance Act. Article 62 of the Federal Constitution empowers the president of Brazil to change a law by means of a provisional measure and to give it the force of law in urgent cases and when the subject matter is important. The “provisional” aspect results from the authority given to the National Congress to examine and decide whether to uphold or reject the legislative change proposed by the executive branch. The Congress has not yet acted on Provisional Measure no. 451 of 2008. Therefore, as of February 2009, it is in full force and effect.

Insurance Examiner (Superintendência de Seguros Privados, SUSEP), the insurance market oversight body, which also issues other rules pertaining to the insurance industry.

The DPVAT insurance system is the result of the movement in favor of the socialization of risks and the dissemination of a network of assistance that seeks to lessen the potentially damaging effects of the risk created by the operation of automobiles. It operates via indemnification that, considered individually, is of low apparent value but, when considered as a whole, has a highly significant social impact.

The cases in which insurance coverage would apply are described in the DPVAT Insurance Act, which institutes coverage in the following manner for death, permanent disability, medical expenses, and supplementary expenses when the injury is caused by a motor vehicle:

- Death resulting from an accident involving a motor vehicle or its cargo
- Permanent disability, either total or partial, resulting from an accident involving an automotive vehicle or its cargo, in which case indemnification is proportional to the extent of the injuries suffered by the victim
- Expenses for medical care and supplementary expenses resulting from the treatment of injuries caused by accidents involving an automotive vehicle or its cargo, administered under medical supervision, by reimbursement of expenses incurred for hospitalization, physicians' fees, drugs, and related treatments.

DPVAT insurance offers coverage for injuries caused by automotive vehicle accidents that occur in Brazilian territory. It indemnifies each victim individually, even when the owner of a vehicle fails to pay the annual insurance premium or when the vehicle cannot be identified by the police. In any case, payment of indemnification is independent of a determination of the fault of the party who caused the damage.² This “no-fault” system is in contrast to the fault-based systems in use in many countries. Some strengths and weaknesses of this approach are discussed below.

2. Articles 5 and 7 of the DPVAT Insurance Act.

Although the requirement to furnish evidence as to which person involved in the accident was at fault is waived, payment of indemnification does, of course, require proof of the injury and the corresponding causal link. The party seeking indemnification must furnish simple proof of the accident and the resulting injury. In other words, the interested party must disclose the presence of the elements required by law: (a) the accident in which he or she was involved that was caused by a vehicle or its cargo, (b) the injury suffered, and (c) the causal relationship between the two.

This proof must be furnished in the form of official documents, such as a death certificate, medical reports of the treatment or hospitalization of the accident victim, the report by the Office of the Medical Examiner, and documents attesting to payment of medical or supplementary expenses. In short, this evidence is easily obtained by someone who has been the victim of a traffic accident. Even so, it is required by law in order to give the insurance system some degree of trustworthiness.

DPVAT insurance even covers personal injuries suffered by vehicle owners and operators and their beneficiaries and dependents. It is, therefore, a civil liability insurance plan that has special features, since it also offers coverage to the party who caused the damage. Again, this is in contrast to systems in some other countries where partial or total negligence affects the indemnification.

Despite the broad scope of coverage under DPVAT, no indemnification can be paid for “fines and postings of bond required of the vehicle operator or owner or expenses of any kind resulting from lawsuits or criminal proceedings.”

The regulations implementing the DPVAT Insurance Act are based on CNSP Resolution no. 154/2006, which instituted disciplinary rules pertaining to all aspects of the conditions and operations of DPVAT insurance except for premiums, which are governed by CNSP Resolution no. 192/2008.

Mode of Operation

Between 1974 and 1986, this insurance was written directly by insurance agents and brokers freely chosen by vehicle owners. During this period, 60 percent of vehicle owners failed to pay the DPVAT premium, making it nearly impossible for this insurance coverage to survive.

In order to eliminate the high rate of default and achieve the necessary penetration of this insurance among the fleet of vehicles in circulation, traffic authorities and executives in the private insurance industry took a series of steps to ensure that vehicles do not circulate without DPVAT coverage. First, the National Traffic Council Resolution no. 664/86 of January 14, 1986, established the single traffic document (*documento único de trânsito*, DUT), which included DPVAT insurance on the list of annual vehicle licensing fees and assessments, payment of which is essential to the licensing and circulation of any vehicle. Second, CNSP Resolution no. 06/86, of March 25, 1986, authorized creation of the DPVAT Convention, formed in April of that same year by a group of 108 insurance companies. Member companies appointed the National Federation of Private Insurance and Capitalization Companies to administer their interests in joint operation of the DPVAT insurance system.

This method of operation proved to be appropriate for DPVAT insurance by greatly facilitating the operational interaction of MTPL insurance with the state traffic enforcement bodies. These began to issue the insurance certificates directly, replacing insurance brokers and agents in this function. Control over the collection of premiums via centralized exchange of electronic data accomplished the following, among other improvements: (a) significantly reduced defaults, which now run at about 20 percent; (b) expanded the number of points of service available to beneficiaries of the insurance nationwide; (c) solidified operations by making all insurers jointly liable and centralized the administration of technical provisions, thereby facilitating monitoring, control, and auditing; (d) reduced overhead (by achieving economies of scale); (e) standardized operations nationwide; (f) standardized the term of validity for all DPVAT insurance policies (now January 1 to December 31; and (g) met the need to guarantee, insofar as possible, fulfillment of the social purpose of the insurance. These have been impressive achievements, although the solidification of operations and centralization of administration (point c) are matters for debate, since in other countries the presence of various forms of competition has generated valuable improvements for the community.

CNSP Resolution no. 154, of December 8, 2006, changed the operational mode of DPVAT insurance that had been in effect until that date, by making the following key changes. (a) It provided that DPVAT insurance should be operated uniformly throughout Brazil by insurers that, after being autho-

rized by SUSEP, would become members of two consortia³ (essentially one covering buses and minibuses and the other covering all other vehicles) that are governed by predefined contractual rules and approved by the oversight body, constituted in 2007, with operations beginning on January 1, 2008. (b) In order to offer DPVAT insurance, insurers had to become members of both specific consortia simultaneously. (c) Insurers that were already doing business in DPVAT insurance under the convention automatically became members of the new consortia. (d) Each consortium would have as leader an insurer that specializes in DPVAT insurance. The same insurance company could serve as leader of both consortia. (e) The rules for adherence and withdrawal of insurers, and amendments to those rules, must be approved in advance by SUSEP and included in the agreements by which the consortia are established. (f) Consortia must stipulate that any one of the insurers is obliged to accept whatever claims are submitted to it. (g) Indemnifications shall be paid by the consortia, represented by the lead insurer. (h) The withdrawal of one consortium from the system will automatically result in the disassociation of the other consortium.

The changes made by the CNSP in the method of operating the DPVAT insurance plan resulted in the following:

1. *Institutional armor-plating.* The designation of a lead insurer and the definition of its responsibility as operational administrator of the consortia (a responsibility properly formalized in the consortia agreements) enabled the system to concentrate, in the lead insurer, the tasks involved in managing the insurance system and consequently permitted the lead insurer to accept responsibility for operations. As a result, the officers of the insurers who are members of the consortia, and the insurers themselves, are no longer held liable in the administrative and judicial spheres of DPVAT insurance operations. Although this approach has brought strength by eradicating irresponsible forms of competition, the lack of competition itself may be a weakness of the system.

3. For reasons of convenience and administrative timeliness, CNSP Resolution no. 154/2006 divided all categories of vehicles between two consortia (see Article 5). One consortium covers vehicles in categories 1 (private cars), 2 (taxis), 9 (motorcycles), and 10 (trucks), and the other consortium covers categories 3 (buses and microbuses that charge fares) and 4 (private buses and microbuses).

2. *Corporate governance.* Designation of a lead insurer to administer and operate the consortia led to the adoption of the same minimum internal control and corporate governance instruments required of other insurers in the market. This significantly improved the operation of this kind of insurance.
3. *SUSEP oversight of the system.* Because all transactions by the consortia are recorded on the books and documentary records of the lead insurer, SUSEP now has free access to the entirety of their operations.

Financial participation by the consortium-member insurers is determined annually. Half is distributed equally among the insurers, and half is distributed in proportion to the net assets of each insurer, effective April of the following year. This formula may give smaller insurers a disproportionate weighting in MTPL exposures, but it is a practical solution.

Service to victims and beneficiaries is provided by an extensive network of offices throughout Brazil. An interested party need only choose an insurer that is a member of a consortium and submit the necessary documentation.

Since January 1, 2008, both consortia have been led by the same entity, an insurer that specializes in DPVAT insurance. Known as the lead insurer, it administers the consortia and is responsible for setting up the system for claims adjustment and payment. The lead insurer was established as a closely held corporation under Law no. 6.404/76, with its principal place of business in the city and state of Rio de Janeiro. It was initially capitalized at R\$15 million (reais), represented by 15 million registered shares of common stock, without par value, distributed among the insurers that participate in the consortia. To give some idea of overall volumes, gross premiums collected by DPVAT insurance in Brazil in 2008 stood at R\$4,645,568,000 (US\$1,988,515,000), representing 7.65 percent of total non-life insurance, with R\$2,428,297,000 (US\$1,039,422,000) going to the National Health System (Fundo Nacional de Saúde, FNS) and the Single Health System (Sistema Unico de Saúde, SUS). Accidents accounted for R\$1,810,768,000 (US\$775,091,000), and administrative expenses accounted for R\$315,122,000 (US\$134,887,000). Membership of an insurer in the consortia does not oblige it to acquire a stake in the capital of the lead insurer.

Policy Wording

In general, to purchase an insurance policy in Brazil, the individual submits a signed application and awaits issuance of the policy. In the case of DPVAT insurance, as in other types of insurance whose features make contracting incompatible with such a formality, contracting is done by issuing a policy certificate, or *bilhete*, a simplified, standardized contractual instrument that makes it feasible to sell insurance policies on a mass basis to the general public.

Despite the effort to simplify and standardize the terms and conditions, the policy certificate must include certain basic elements in order to provide the policyholders with the minimum information they need to exercise the rights inherent in the product. SUSEP establishes these basic elements in each case in order to ensure appropriate and full exercise of the rights involved, without making contracting impractical.

In the case of DPVAT insurance, CNSP Resolution no. 154/2006 provides that SUSEP should establish the minimum elements of information that must appear on the policy certificates pertaining to all categories of vehicle. To that end, SUSEP issued Circular no. 373/2008, which prescribes the minimum mandatory content of the DPVAT insurance policy certificate that, for the sake of convenience, accompanies the certificate of registration and licensing of automotive vehicles, a document that all operators of automotive vehicles must carry with them.

The SUSEP regulation requires the following information to appear on the DPVAT insurance policy certificate: type of insurance; definition and purpose of the insurance; current telephone numbers to call for clarification; updated Web site from which to obtain clarifications; policy number; information identifying the vehicle owner; information on policy issuance; limits on indemnification per coverage and per individual victim; documentation required to request indemnification, per coverage; deadline for settlement of claims; description of the vehicle; and information on the premium.

The information that appears on the DPVAT insurance policy certificates supplied to vehicle owners is comprehensive. The model adopted by Brazil for DPVAT insurance, by establishing the minimum standard for information, gives holders of the policy certificates and potential interested parties the information they need to exercise their rights, if any.

Table 2.1. Indemnity Amounts for DPVAT Insurance, 2005–09 (R\$)

<i>Year</i>	<i>Death</i>	<i>Disability</i>	<i>DAMS^a</i>
2005	10,300.00	10,300.00	2,000.00
2006	13,479.48	13,479.48	2,695.90
2007	13,500.00	13,500.00	2,700.00
2008	13,500.00	13,500.00	2,700.00
2009	13,500.00	13,500.00	2,700.00

a. Medical and supplementary care expenses.

Tariff Regulation to Be Applied, Limits, Coverage, Premiums, and Loadings

The amounts of indemnification are established in the DPVAT Insurance Act: a fixed sum of R\$13,500 for death; a variable sum, limited to R\$13,500, for permanent disability, either total or partial; a variable sum, limited to R\$2,700, for reimbursement of medical and supplementary expenses actually incurred.

Inflation has an impact on these values. When compulsory insurance was established by means of Law no. 6,194/74, the amount of indemnity was indexed to the minimum wage. However, in 1975, Law no. 6,205 eliminated the minimum wage as the basis for establishing DPVAT insurance indemnity (furthermore, Article 7 of the 1988 Federal Constitution expressly prohibits use of the minimum wage as a general indexer). Beginning in 1975, the CNSP, the entity within the Ministry of Finance responsible for issuing policy guidelines and rules related to private insurance, began to set, on a periodic basis, indemnity amounts based on changes in the inflation rate. Table 2.1 presents indemnity amounts from 2005 through 2009.

The question arises as to whether larger limits ought to be available. Given that DPVAT insurance is mandatory, it does not offer automobile owners any additional coverage or the possibility of increasing indemnity amounts. However, risk coverage can, of course, be supplemented by obtaining optional civil liability insurance to cover third parties and personal accidents, with DPVAT providing primary risk coverage.

As customarily occurs because of the principle of proportionality, the amount of indemnification for permanent disability is related to the extent of the injury suffered by the accident victim, although limited to the sum estab-

lished in the law itself. In the case of reimbursement for medical or supplementary expenses, the amount of indemnification corresponds to the sum that the victim actually spent to obtain medical and hospital treatment, but it is always limited to the legal ceiling.

Coverage limits apply to each specific event. This means that they apply to a given accident, with respect to each of its victims, regardless of the number of victims involved. Also assured is the possibility that the same person may benefit from a *new* indemnification during the same calendar year if, because of a new misfortune, he or she suffers *other* injuries from *another* accident that involves an automotive vehicle. And so the same benefit can be received more than once by the same beneficiary in the same calendar year only if the injuries result from different accidents.

With respect to a single event, the benefit is not cumulative in the case of coverage for death and permanent disability. An offset is possible when the disability is followed by death. Indemnification for medical expenses, however, can be combined with either of the other two types of coverage.

Premiums are fixed annually for each category of vehicle by a CNSP resolution, as a result of statistical data developed and actuarial calculations performed by SUSEP, which take into consideration the frequency (number) and seriousness (amount) of indemnifications paid in the country as a whole as well as per category of vehicle. Therefore, changes in the frequency and size of the indemnifications paid, taken together, have a direct impact on the insurance premiums paid by the country's vehicle owners.

For example, CNSP Resolution no. 192/2008 set the premiums for DPVAT insurance to be charged in 2009 for the various categories of vehicle.⁴ Premiums are determined using only the criteria mentioned above, that is, the frequency and seriousness of the indemnifications paid. Neither the model nor age of the vehicle is considered, nor are the personal characteristics of the vehicle owner. This very simple tariff, based just on the category of vehicle, has the merit of being easy to administer. Some other countries use much more complex price structures—for example, incorporating a bonus-malus system to encourage better driving. Where this can be implemented efficiently, it may assist in raising driving standards, but there are strong reasons to favor a simple system.

4. Article 2. The premium rates, by categories, are established as categories 1 and 2, R\$89.61; category 3, R\$339.74; category 4, R\$210.65; category 9, R\$254.16; and category 10, R\$93.79.

Recently, Provisional Measure no. 451 instituted a fee to be charged to cover the cost of issuing and collecting payment for the policy certificate. This is an important innovation, since the policy certificate is part of the DUT, which is printed annually on special paper in order to protect against fraud.

As required by law and by the CNSP, the total sum of premiums collected is allocated as follows:

- 45 percent goes to the Single Health System operated by the Ministry of Health to cover the costs of medical and hospital treatment for victims of traffic accidents⁵
- 5 percent goes to the National Traffic Department, which is part of the administrative structure of the Ministry of Cities, for use in sponsoring accident prevention programs⁶
- 3.4428 percent is for administrative expenses⁷
- 2 percent is for profit margin
- 0.5 percent is for brokerage⁸
- 44.0572 percent is for payment of claims and formation of the incurred but not reported (IBNR) reserve.⁹

The above ratios vary between the two consortia. Some of the ratios contrast strongly with those applying in other countries. Given the rigid structure of the distribution of the funds collected as premiums for DPVAT insurance coverage, an eventual denial of coverage, with the resulting refusal to pay an improper indemnification—for example, because of the absence of the circumstances that, by law, must be present for coverage to be given—does not generate any financial benefit for consortium-member insurers, although having financial involvement might improve the management of claims. In such a case, funds over and above those originally allocated for payment of indemnifications automatically revert to the IBNR technical reserve, as stipulated in CNSP Resolution no. 153/2006. As indicated, the profit for insurers that are members of the consortia is limited to 2 percent of the premiums collected.

5. See Law no. 8.212, of 1991, as amended by Law no. 9.503, of 1997.

6. See Law no. 9.503 of 1997.

7. This percentage is 6.5629 percent for the consortium that handles categories 3 and 4.

8. For the consortium that handles categories 3 and 4, the brokerage percentage is 8 percent.

9. The percentage is 33.4371 for the consortium that operates categories 3 and 4.

Accounting Standards

The current operating model for DPVAT insurance in Brazil calls for the system to be operated by two consortia of insurers, as explained above. Legislation also requires that DPVAT operations be fully booked on the financial and accounting statements of the lead insurer, which executes the contracts and distributes among the other consortium members the revenues and expenses of the operation, according to the proportionality of their respective holdings in these consortia.

Because the entire DPVAT insurance system is handled by a single insurer, the preparation and publication of the financial statements are subject to the rules and procedures established in SUSEP Circular no. 379/2008.

Financial statements are prepared as of June 30 and December 31 every year and include the report by management, balance sheet, statement of cash flow and changes in net worth, the notes, and the independent auditor's report. These must be published no later than August 31 and February 28 of every year, respectively. To facilitate comparison, the June 30 and December 31 financial statements must show the figures for the same period of the preceding year and adhere to the model publication formats established by SUSEP. The financial statements are published in a major newspaper and in the official government press. Copies of these publications must be sent to SUSEP no later than September 15 for publications pertaining to the June 30 base date and no later than March 15 for those pertaining to the December 31 base date.

The insurers that participate in the consortia must periodically prepare and send to SUSEP accounting information pertaining to their participation, presented on the periodic reports form, and complete a quarterly questionnaire, accompanied by the report from their independent auditors.

The lead insurer of the DPVAT insurance consortia must send SUSEP, every month, detailed statistical data on the premiums collected and the claims reported and paid during the period covered by the report.¹⁰

10. See annex III of SUSEP Circular no. 360/2008.

Reserving Standards (for Premiums and Claims)

Current regulations do not call for the establishment of a technical reserve for premiums.

Although legislation provides that insurance policies always take effect on the first day of a calendar year or, in the case of a new vehicle, once it is entered into the official vehicle database (National Automotive Vehicle Registry), the lead DPVAT insurer, as administrator of the DPVAT insurance consortia, does not issue the policies or record the premiums on its account books until it receives notification from the banks attesting to the payments made by the vehicle owners.

The provision for outstanding claims must be established to cover the estimated sums to be paid on claims reported as of the calculation base date, according to the liability assumed by the insurer.

The provision for losses incurred but not reported must be established to cover the expected value of losses that have occurred but, as of the calculation base date, have not yet been reported, according to the liability assumed by the insurer.¹¹

Claims-Handling Standards

The following criteria must be observed in settling claims under DPVAT insurance. Under the law, the lead insurer of the DPVAT insurance consortia is responsible for adjusting claims but may delegate that function to other insurers or specialized companies.

Depending on the kind of coverage claimed, beneficiaries of the DPVAT insurance are required to submit the following documents:

- *For coverage in the event of death* resulting from an accident caused by an automotive vehicle, the party requesting the benefit must submit the death certificate, a copy of the police report, and proof that the applicant is a beneficiary of the victim. If doubt arises about the causal

11. See CNSP Resolution no. 153/2006.

relationship between the accident and the death, the evidence must be supplemented by a certified copy of the autopsy report.

- *For coverage of permanent disability*, the claim must be supported by a report of hospital treatment, a copy of the police report, and a supplementary report by the office of the medical examiner describing the accident. If the causal relationship between the accident and the permanent disability remains uncertain, then a report of hospitalization or treatment, if any, furnished by the hospital and social security systems may be necessary.
- *With respect to reimbursement of medical and supplementary expenses*, the claim must be accompanied by a report of hospital treatment, a copy of the police report, and proof of the expenses incurred by the victim for care by a hospital, emergency room, or attending physician, if any.

As provided in the law, indemnifications must be paid no later than 30 days from the date that complete documentation is submitted.

Criteria for Bodily Injury, Calculation of Negligence in Property Losses, and Other Types of Losses

Indemnification for permanent disability must be proportional to the injuries suffered by the victim. Appropriately measured, injuries should be indemnified according to a gradation. For more serious injuries that have a greater impact, the indemnification should be more significant. For more moderate injuries, the sums paid should be smaller.

The link between the extent of injuries and the amount of benefit respects the differences between factual and juridical situations and assigns them an appropriate financial repercussion that is unique to each case. Distinctions are drawn between unequal cases to the extent that they differ, in order to employ the well-known formula of distributive justice. After all, it is not reasonable to treat an extensive and compromising injury such as the loss of a leg as equivalent to the loss of a toe.

Not only is it fair, but proportionality is also an indispensable means of preserving the actuarial equilibrium of the insurance. After all, when an

insurer is compelled to pay indemnification for an event that was not anticipated in its calculations or—which amounts to the same thing—is compelled to pay more than the amount on which its actuarial calculations were based, the insurer and the policyholders are placed at risk. The insurer may lose the funds it needs for future contingencies.

For all of these reasons, the DPVAT Insurance Act provides that damages resulting from injuries that result in permanent disability be indemnified by applying a certain percentage to the maximum amount specified in the coverage, depending on how each of the injuries involved is classified in the personal injury insurance schedule.

Lastly, it is worth noting that under the DPVAT insurance system, no calculation is made with respect to the degree of negligence, incompetence, or imprudence exhibited by the party who caused the damage. The law ignores the fault of those involved when it confers the right to indemnification. This means that potential negligent or imprudent conduct by the driver(s) is not even taken into account. It is legally irrelevant for purposes of DPVAT insurance. This is true for all three types of coverage: they dispense with any evaluation of the degree of negligence, incompetence, or imprudence by the operator of the vehicle that caused the injuries. Naturally the evaluation of fault or malice on the part of the driver may have legal significance from other standpoints such as, for example, determination of criminal or civil liabilities.

The situation in Brazil differs significantly from the arrangements in many countries, where the wholly at-fault driver is not entitled to any compensation for his or her error and where a passenger not wearing a seatbelt is often found to have contributed to his or her injuries. On the one hand, arguments related to negligence or contributory negligence bring home to the general consumer the good reasons to drive carefully and wear a seatbelt. On the other hand, the no-fault system has great merit in being simple to administer and enabling quicker payments than a fault-based system. Thus the Brazilian solution has both advantages and disadvantages.

Contingency Reserving

DPVAT insurance legislation in Brazil does not call for the formation of a contingency reserve. However, in addition to the claims reserve mentioned earlier, a provision for administrative expenses may be created by using the surplus funds remaining from the administrative income reported by the consortia.¹²

Auditing Standards

The same general auditing rules as established for all other insurance companies doing business in the Brazilian market apply to the lead insurer of the DPVAT insurance consortia.¹³

Independent Auditing

The financial statements produced by the companies, including the explanatory notes, are audited by an independent auditor who must be registered with the Brazilian Securities and Exchange Commission and certified by the Federal Council on Accounting and by the Institute of Independent Auditors of Brazil. They must also satisfy the minimum requirements stipulated by the CNSP and SUSEP.

Independence of the Auditor

In line with the most advanced international standards, independent auditors are required to employ a series of criteria and to follow certain procedures in order to ensure their independence with respect to the audited company. The following acts, especially, are prohibited:

12. See CNSP Resolution no. 153/2006.

13. See CNSP Resolutions nos. 118/2004 and 195/2008.

- Contracting of an independent auditor who has a direct or indirect equity interest in the audited company or any of its subsidiaries, affiliates, or their equivalents
- Contracting of an independent auditor who is a creditor or debtor of the audited company or any of its subsidiaries, affiliates, or their equivalents
- Payment of honoraria and reimbursement of expenses incurred by the independent auditor with respect to the base year of the financial statements that are the object of the audit, when made by the audited company itself or in conjunction with any of its subsidiaries, affiliates, or their equivalents, when such payment represents 25 percent or more of the total sum invoiced by the independent auditor in that year
- Provision of the services of both the independent auditor and consultant, especially consulting services that involve reevaluation of permanent assets when such reappraisal is used as a basis for the financial statements; appraisal of assets, except evaluation of net worth at book value, including assets of its subsidiaries, affiliates, or their equivalents; determination of values for purposes of forming technical reserves, including the IBNR reserve and the contingency reserve, when those values are used as a basis for the financial statements; tax planning; and internal auditing.

Rotation of Independent Auditors

Companies must replace the chief technical officer, director, manager, supervisor, and anyone else who has managerial duties and is a member of the team involved in the auditing work after opinions relating to not more than five full company fiscal years have been issued. This chief technical officer, director, manager, supervisor, and any other team member who had managerial duties may rejoin the team involved in the auditing work after three years have elapsed since the date of the last opinion.

Reports, Opinions, and Communications from Independent Auditors

Having completed their audit, the independent auditors shall produce the following documents, which must be forwarded, or made available, to SUSEP for checking or audit:

- An audit report, in which the opinion is expressed that the financial statements and their notes were prepared in accordance with the accounting practices adopted in Brazil and that they comply with the accounting rules issued by the CNSP or SUSEP
- A detailed report as to the appropriateness of the accounting procedures and practices followed in disclosing information in the financial statements
- A detailed report on any failure to comply with provisions of the law or regulations that has, or may have, a significant impact on the financial statements or the continuity of operations by the audited company
- A detailed report on the appropriateness of the internal controls of the risks borne by the supervised company, identifying any deficiencies found
- A formal notification to SUSEP by an independent auditor of any irregularities considered to be serious errors or evidence showing that the audited company may be unable to continue operations
- Other documents as may be requested by SUSEP.

Appendix. Article 3 of the DPVAT Insurance Act

Article 3 of the DPVAT Insurance Act, according to the text of Provisional Measure no. 451, reads as follows:

Article 3. The personal injury coverage available under the insurance established in Article 2 of this act includes indemnification for death, complete or partial permanent disability, medical care expenses, and supplementary expenses in the following amounts per injured person and according to the rules stated below:

- I. R\$13,500 in the case of death
- II. Up to R\$13,500 in the case of permanent disability
- III. Up to R\$2,700 as reimbursement to the victim for duly substantiated medical care and supplementary expenses.

§1 With respect to the coverage that is the subject of section II above, injuries resulting directly from the accident must fall within the classification in the schedule attached to this act and must not be susceptible to relief by any therapeutic means. A permanent disability is classified as either total or partial. Partial permanent disability is subdivided into complete and incomplete, depending on the extent of anatomical or functional losses, the following provision being observed:

I. In the case of a complete partial permanent disability, the anatomical or functional loss must fall directly within one of the organic or bodily categories shown on the attached schedule. The indemnification will correspond to the figure resulting from the application of the percentage established in that schedule to the maximum amount of the coverage; and

II. In the case of an incomplete partial permanent disability, the classification of the anatomical or functional loss shall be done in the manner provided in the preceding section, followed by a proportional reduction in the indemnification that shall correspond to 75 percent for losses having intense impact, 50 percent for those having moderate impact, and 25 percent for those having a mild impact. The figure of 10 percent shall apply to residual impacts.

§ 2. The insurance provided for in this act does not cover expenses resulting from medical or hospital care administered in an establishment or hospital accredited with the Single Health System even when provided on a private basis, and payment of any indemnification in those cases is prohibited.

CHAPTER 3

Calculation of Premiums and Reserving: Experience from Developing Countries

*Denis Chemillier-Gendreau **

Three well-known characteristics of insurance have an impact on the management of motor third-party liability (MTPL) in emerging countries, particularly on its pricing and its reserving:

- *Inverse sequence.* In insurance, the producer (the insurer) prices its service (insurance coverage) before its cost is known (the actual cost of the claim, if and when a claim occurs). When the insurer sets its prices, it faces two uncertainties: one regarding the number of claims that will occur and one regarding the total cost of all these claims. These uncertainties also affect the supervisory authority when it sets the statutory price of compulsory insurance such as MTPL.
- *Long time lag.* Although the insurance activity has to be accounted within a yearly framework, the entire process (period between payment of the premium and settlement of the claim) usually takes more than a year. Therefore, at the end of each year, the insurer has to set aside an amount on the balance sheet to meet liabilities arising out

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of insurance contracts underwritten during the accounting year, including claims provision (whether reported or not) and other technical provisions. And the longer the settlement process (as in emerging countries), the more difficult the reserving issue.

- *Market cyclicity.* In almost all free markets, the profitability of insurance rises and falls in economic cycles. Any understanding of the management of an MTPL portfolio needs to take into account the reality that the forces of competition create times when pricing can and will either rise above or fall below the pure risk rate. The cyclicity of insurance pricing can affect pressures on MTPL even when that class is price-controlled.

These three features of insurance (inverse sequence, long time lag, and market cyclicity) affect both the pricing and the reserving of insurance, especially in the MTPL branch in emerging markets.

In addition, the process of reserving for claims and other liabilities already incurred as a result of writing the MTPL business does not affect the ultimate profit or loss stemming from that business; it only controls the rate at which that profit or loss will emerge in the accounts. Nevertheless, ultimately, an insurer will only survive if it charges adequate rates consistently over time for the risks that it accepts.

Actuarial Approach of MTPL Premiums

In most emerging countries, compulsory MTPL premiums are statutory, and the government, either directly or through some more complex governance process, is in charge of setting statutory maximum prices. In most of the more mature markets, prices are free and only subject to tough competition. In general, insurance risks can be very volatile, and the cost of meeting claims is constantly under pressure from inflation and other upward trends. Also, the fact that policies are normally issued on a one-year renewable basis means that, in a competitive environment, an insurer can lose good business or gain bad business very quickly if its rates become out of line with the rest of the market. In this case, it is of vital importance for an insurer to keep rates under constant review and to amend them as necessary. This chapter

aims to help insurers and insurance supervisory authorities to ensure that the price of MTPL insurance policies is properly set. It is highly desirable that the insurance supervisory authority, when setting the price of compulsory insurance (if that is part of its mandate) and supervising market practices, (a) should have powers to intervene if an insurer's activities threaten its solvency margins and (b) should have a regular flow of information that promptly indicates when intervention may be required. It also should be able to take action to manage any dumping attempt that may push market prices below the breakeven level.

In both cases, a trivial rule of insurance is that the premium charged to the insured before tax must represent the risk introduced to the insurance company (including every component of the costs) and an acceptable level of profit margin. The actuarial equation to define a fair-cost premium is, therefore, as follows:

$$\text{Fair-cost premium} = \text{base premiums (cost of claims)} + \text{acquisition cost} \\ + \text{administration cost} + \text{profit margin} - \text{financial income.}$$

A different equation expresses the relation between costing and pricing:

$$\text{Market premium} = \text{fair-cost premium} +/\text{- market price adjustment.}$$

Costing the product (that is, determining the theoretically correct cost of the product being offered) is included in the base premiums. *Pricing* the product (that is, deciding on the actual premiums to be charged in practice) relates to the loading factors of the equation and the market forces that may cause the company to adjust the theoretical rates during the pricing process.

The Basis of Pricing: Actuarial Principle of Equivalence (between Premium and Expected Cost of Claims)

The major component of the premium (cost of claims) is unknown at the time the price is set. Although the exact future amount is by definition unknown, it is likely that some information can be collected from the past in order to estimate its value. In practice, there are many ways of calculating

new premium rates; methods range from a simple percentage uplift of the whole rating table to much more sophisticated rating models dealing with many parameters and variables for each rating group.

The rating process normally starts with a calculation of the pure risk premium (that is, the premium required simply to meet the expected cost of claims arising from the policies written under the new rates); to this should be added loadings for expenses, profit, and other contingencies.

When setting up the price of an MTPL insurance contract, premiums are quoted in relation to the unit of exposure. At its simplest, the risk premium for any group could be calculated by analyzing the values of the following:

$$\text{Risk premium (RP)} = \text{expected cost of claims} / \text{number of contracts}.$$

This approach is always easy to undertake, since both the “expected cost of claims” and the “number of contracts” are usually available information. It can be refined in order to make the best use of the data by introducing the following breakdown:

$$\text{RP} = (\text{expected cost of claims} / \text{number of claims}) \times (\text{number of claims} / \text{number of contracts}).$$

$$\text{RP} = \text{average cost of claims} \times \text{frequency of claims}.$$

By looking only at the overall value, it may be possible to mask separate trends in these features. In addition, if data are available, it may even be possible to distinguish between bodily injuries (BI) and property damages (PD), which are very different in terms of frequency and average cost:

$$\text{RP} = (\text{average cost of claims} \times \text{frequency of claims}) \text{ for BI} + (\text{average cost of claims} \times \text{frequency of claims}) \text{ for PD}.$$

Obviously, these four parameters (average costs and frequency of claims for both BI and PD) may vary dramatically for different types of drivers, vehicles, and uses, leading to different classes with different premiums.

The main point is that an insurer derives the risk premium by taking the experience of a past period and projecting it to its future rating period. In

doing so, it is important to make sure that the base data are appropriate for this purpose.

In particular, an allowance should be made for changes in the following:

- Portfolio mix
- Claims habits of policyholders
- Underlying risk
- Trends in the general level of claims experience (expected changes in claims frequency and average cost per claim)
- Claims inflation.

The foregoing is only part of the picture, however. Risk segmentation analysis is a huge subject, covering the enormous actual differences in risk, which have been shown to follow from basic features such as the following:

- Gender of the driver (females overall usually prove to be about 10 percent lower risk than males)
- Age of driver (if age 35–60 is price index = 100, then age 25–30 is usually price index = 115–125 and age 21–24 is often price index = 175–350)
- Type of vehicle
- Use of vehicle (for example, bus, taxi, police, as well as for social or work)
- Loss record
- Occupation
- Location of main residence.

Space restrictions here preclude a detailed discussion of risk segmentation. However, it is an enormously important subject in all motor insurance, and, although developing markets will have greater priorities on which to focus when establishing a sound MTPL framework, risk segmentation needs to be borne in mind as markets develop.

Before we leave segmentation as a subject, a few words should be given to the importance of data collection. It is not possible to run a well-designed motor pricing framework without the collection of some basic levels of rel-

evant statistical data. Again, space precludes us from discussing this in detail, but the more detailed are the data collected, the more effective are the pricing and the actuarial analysis. Basic records should be held as to the following:

- The number of vehicles insured within the different categories of vehicle—for example, bus or coach, heavy goods, light goods, private car, taxi, local authority (police, fire, garbage, and so forth), motorcycle, agricultural, other—preferably breaking out the statistics for private cars by size of engine
- The losses caused by those vehicles (it is worth recording losses by causation even if the system initially is a no-fault system)
- The split of the losses as to third-party injury, third-party damage, and other types of coverage, such as own damage, fire, wind, flood, or hail, and theft
- The dates of the losses and the dates of the respective payments.

After risk segmentation, the second most important driver of risk is the impact of inflation. Claims inflation is particularly relevant since it is, in general, very different from the national retail price index. Claims are subject to many different cost influences and therefore are unlikely to react to inflation in exactly the same way as the retail price index, which is, in any case, a generalized index of many items, some unconnected to the types of losses involved.

Within motor insurance business, it is relevant to consider the following:

- Many of the larger claims involve litigation. They therefore will be heavily influenced by prevailing levels of court awards and social attitudes.
- Court awards often compensate for the loss of earnings.
- Court awards also often compensate for medical expenses.
- For vehicle damage, the price of spare parts, the hours charged for work by garages, and the price of a new car should be taken into account.

Hence inflation pressures are a composite of underlying components:

- Court-award inflation
- Wage inflation
- Medical inflation
- Car parts inflation.

The Loaded Premium: Adjustments for Commission, Expenses, and Other Loadings

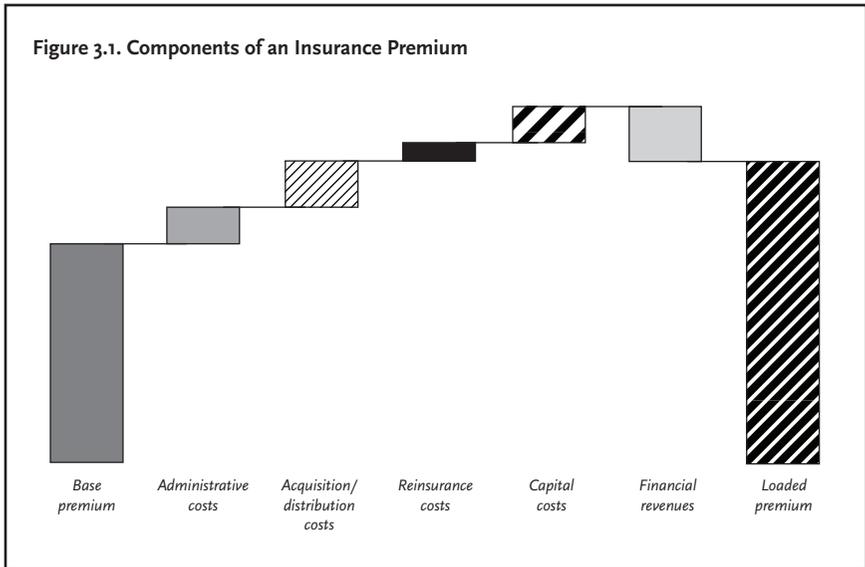
The commercial premium results from the risk premium loaded by factors such as acquisition and distribution costs, administrative costs, net reinsurance costs, and capital costs net of financial revenues.

Although all of these costs generally are not explicitly and analytically included in the premium, eventually the premium will have to cover all of them. It is, therefore, important for both the companies and the supervisory authority of each country to ensure that the commercial premium can cover all of the costs. Unless the price weakness is purely a cyclical matter, the business will not be profitable and will at some point have difficulty settling claims.

Insurers, however, adopt many different ways of doing this in practice. Some do no more than add an overall percentage to existing premium rates, based on the evidence of last year's underwriting results. Others go a little further and allow more directly for expenses by adding a certain percentage to the recalculated risk premium. In some cases, this may be more than a simple overall percentage addition to the risk premium; in others, expenses may be allowed for in a more detailed way, having regard for their fixed or variable nature.

The danger of using a simple overall loading in this way is that it may not react to changes in the size and nature of the business written. This may lead to inadequate provision being made for the expenses that do occur, particularly for those that are fixed.

Figure 3.1 gives a visual breakdown of an insurance premium and its components. The weights of these different loading factors vary among countries and companies. Some companies that have a weak control on costs have high administrative costs (up to 50 percent of the base premium in a company in Madagascar before the market was opened to foreigners in 2005).



Another approach is based on the “combined ratio,” which adds the loss ratio (total claims costs incurred in one accident year over the earned premium) to the management ratio (administrative costs over written premium) and to the commissions ratio (total commissions and acquisition costs over written premium). This ratio can be measured net or gross of reinsurance.

An analytical vision that looks separately at each component of the premium is key for competition. In many emerging countries, where this analytical vision does not prevail, competition tends to focus on the overall premium. In fact, in most developed economies, the sale of motor insurance is deeply embedded in overall price competition. It is arguable how far such competition can be healthy. Base tariffs have to be economically founded, and competition should never drive premiums below these base tariffs when averaged out across the market cycle. Healthy competition can be focused on the different loading factors, on which companies have internal leeway and value added, and on detailed segmentation, as mentioned above.

Obviously, this “industrial” vision of insurance requires a whole set of necessary skills:

- Solid technical actuarial skills and sufficient and reliable data, in order to know claims by product and by accident year and to assess the various components of the overall premium
- Precise management control, making it possible to break down administrative costs per product
- Ability to assign capital per product and a prospective vision of profitability.

A methodology for loaded premium pricing will include all of the following considerations: the previous loss history of an insurance plan, adjustments to data used in the methodology based on changes in the insurance program over time, and technological factors that may, in the opinion of an actuary, influence the expected losses under an insurance plan in the future.

Depending on the availability of data, three methods can be used simultaneously: historical analysis (retrospective rate making) that is adjusted with two other elements: surveys and benchmarks.

ACQUISITION COSTS

This first component represents the expense of soliciting and placing new insurance policies. It includes, first, the variable cost of distribution channels (broker's or agent's commissions, wages of salespersons when they are directly employed by the company), underwriting expenses, medical and credit report fees, and marketing support services (advertisements and communications, commercial material such as brochures and flyers).

The cost of acquiring business depends on how business is sourced to the companies. In the past, most of the motor insurance business was introduced to insurance companies through commissioned agents. This pattern is changing, with the use of the direct-sales telephone and especially the advent of Internet-based insurance sales.

From a supervisory authority's point of view, it is important to make sure that the effective acquisition costs remain relatively low. Acceptable rates would usually range from 5 to 10 percent. In most of the emerging markets, the acquisition costs of MTPL are within these brackets and do not constitute an issue regarding profitability of the business.

ADMINISTRATIVE COSTS

The second component represents the share of the company's overhead that should be allocated to the MTPL branch for administrative purposes. This allocation is fairly difficult, as it should be based on a detailed analysis of overhead in order to assess the part of each element that could be allocated to this specific branch. In many countries, MTPL represents an important part of the business and therefore should be allocated with a majority of the overhead.

When the companies or the insurance supervisory authorities start looking at the administrative costs per se, they are more inclined to reduce them. This can be done by simplifying procedures, investing in information technology, and training personnel. In addition to the benefits of direct selling, costs can be reduced by adopting simplified procedures, leading to shorter working time and less paperwork.

REINSURANCE COSTS

In the ordinary course of business, an insurer cedes reinsurance to other insurance companies. These arrangements provide greater diversification of business and minimize the net potential loss arising from large risks. The difference between ceded premiums and ceded claims results in a net reinsurance cost for the insurer.

In emerging countries, the risks can be shared between a direct company and the reinsurer in various ways. Proportional treaties often are predominant (the reinsurer shares the result). Indeed, this type of reinsurance treaty is well adapted to the risk of a change (a sudden change in the frequency or average cost of claims), risk of a wrong tariff, and risk of adverse selection.

As the market matures, the emphasis of MTPL reinsurance in emerging countries shifts to nonproportional type. In Europe, the typical structure of an MTPL reinsurance program is nonproportional (the reinsurer receives the tail of the losses—that is, the reinsurer bears the risks in excess of a determined level of losses from any one event). The reinsurer then focuses on the increase in severity of very severe claims or a change in the social compensation environment.

The need for proportional MTPL reinsurance will be a function mainly of the insurer's solvency margins; the need for nonproportional reinsurance will mainly be a function of the legally required policy coverage. These matters are discussed in a separate chapter.

CAPITAL COSTS

An additional component of the premium is the cost of capital. An insurer that accepts a risk must, on the one hand, constitute a solvency margin and, on the other hand, guarantee a sufficiently high remuneration of it. The price of this solvency margin—that is, the return to shareholders—must be included in the premium rate as a profit margin. Normally, the contribution to profit will be set as an agreed target percentage of the gross loaded premium. A level of 15 percent is often considered a fair objective.

FINANCIAL REVENUES

The fifth component of the cost structure is constituted by the financial revenues, although, in this case, the component constitutes a revenue. Insurers will, in fact, be able to invest part of the premiums for some period of time, until they are required to settle the claims arising on that business. This can be particularly significant for long-tailed classes such as MTPL. These net financial revenues diminish the risk to the insurer and benefit to the client. In practice, insurers will normally make some allowance for investment income when setting premium rates, either implicitly within the parameters used for inflation or explicitly by an allowance. In the case of an allowance, the insurer should discount the projected cash flow at a suitable rate of interest.

Rating Factors

After the loading process has been established, the final step is to determine the actual price (that is, the premium rate) at which the insurer must

offer the product. In the case of a tariff set by the government, the insurance supervisory authority should only take into account the actual values of the components mentioned above.

All rating structures should separate risks into broadly similar, homogeneous subgroups. In this way, the insurer can charge premiums that are appropriate to the experience of each risk group and, hence, are broadly equitable among policyholders in different risk groups. Therefore, the selection of risk factors must be appropriate for this purpose if equitable differentials between the premiums charged for each group are to be achieved. The two most important considerations in choosing the rating factors are that they should reflect any feature that is known to affect the risk and they should be capable of practical, accurate determination.

This segmentation can be done by the insurers themselves, in order to offer lower prices to car owners with a better risk profile. But it can also be applied by the government to the statutory premium of compulsory MTPL, through some “premium classes.” Setting up these premium classes is a complex matter. On the one hand, the rationale behind this segmentation is that a unique premium for all types of cars and users would impose a cross-subsidy between different risk profiles and probably result in market distortions and counterincentives. On the other hand, it is important to maintain a minimal mutualization among policyholders, which is the core principle of insurance. The tradeoff between these two objectives (segmentation to avoid bad cross-subsidies and mutualization between policyholders) is a difficult issue.

A valuable distinction can be made between the level of segmentation that is possible for the private insurer and the level of segmentation that is possible for a government-sponsored insurer. It makes strong economic sense for the government-sponsored insurer to distinguish between a bus or coach and a heavy goods vehicle and between a private car and a taxi, for example, but it is not realistic for the government-sponsored insurer to vary pricing between one suburb of a city and another nor to try to address detailed bonus-malus issues. Generally, the more that the private individual grows to appreciate the nuance of cost related to his or her insurance risk, the more responsible that individual will become. So segmentation of pricing is a valuable tool in raising public awareness of the link between risk level and premium level.

Practical Application of These Actuarial Principles in Emerging Countries

In most emerging countries, MTPL premiums are set by the government. The rationale behind this statutory price is generally a mix of many arguments, including (a) the price of insurance is—like the price of bread and other basic products—a sensitive part of households' net expenditures that the government may wish (or need) to control, (b) the insufficient development of a competitive market may bring up a large gap between the commercial premium and the pure premium, and (c) the solvency of companies in case of major claims has to be guaranteed by the state.

Of course, the question whether this statutory price of MTPL is fair or not is of prime importance. Unfortunately, to our knowledge, it rarely is given such priority:

- In Algeria, the average deficit of 70 percent for MTPL business has led the government to increase MTPL tariffs by 5 percent every six months from January 2008 to December 2009, but the top official of the Insurance National Council admits that this will be insufficient to bring the branch's accounts to equilibrium.
- In Tunisia, while the annual average premium is around €60 compared to €12 in Algeria, the automobile branch is in structural deficit, and tariffs will have to be increased.

This situation is not surprising for many reasons. In addition to political reasons, (a) mandatory prices are not updated regularly, (b) they do not take into account inflation, and (c) emerging countries are usually affected by a high rate of accidents, giving rise to a large number of claims.

Insurance companies try to offset this structural deficit by delaying the settlement process (retaining the cash improves the financial returns). There is, therefore, a clear relation between low mandatory premiums and slow settlements.

But, unfortunately, a slow settlement process weakens the credibility of the entire insurance sector, producing a low penetration of discretionary insurance products such as life insurance (1.45 percent of GDP in emerging coun-

tries but 5.42 percent in industrial countries, with premiums of US\$40 per capita compared with US\$2,143, respectively).

Low premiums on the MTPL segment give a wrong idea of the actual costs of risks to car drivers and, therefore, do not favor prevention; they force insurers to cross-subsidize their MTPL deficit by charging high premiums on other lines of insurance, creating a disincentive for consumers to subscribe to those lines.

Governments or insurance supervisory authorities should do their best to set MTPL premiums close to their real cost and to put in place a bold prevention policy aimed at reducing the frequency of car accidents.

In most emerging countries, the lack of a bonus-malus system creates no individual incentive to improve behavior. A bonus-malus system is in force in France, but not, for instance, in Brazil, China, India, or Russia. However, MTPL insurance became entirely mandatory in Russia in 2004, and Russia is expected to introduce a bonus-malus system in a forthcoming reform of insurance.

Premium Reserving: Why and How?

Reserves are the amount required to be carried as a liability in the financial statements of an insurer or reinsurer to provide for future commitments under outstanding policies and contracts.

Reserve for Unearned Premiums

A reserve for unearned premiums (UPR) is the amount set aside by the company to meet its liabilities for insurance transactions issued before the end of the financial year and still in force as of December 31 of that year. The portion of premiums for these risks must be allocated to the following financial year (or to subsequent financial years in the case of multiannual contracts). In other words, at the end of the accounting year, there will be numerous contracts that started before the end of the year and for which premiums have been received but where the contracts have not expired. Part of the written premiums on these contracts will cover risks to be borne after

the end of the accounting year. It is logical not to consider the full written premium as revenue for the past accounting year, as the written premium may not be fully “earned.” Symmetrically, part of the written premiums should be set aside (in the last accounting year) to cover the portion of the risks to be borne in the next year (and possibly even later). The liability for unearned premiums is calculated by a formula such that the premium written is earned pro rata over the term of the policy. Different methods of calculating UPR are detailed in the appendix to this chapter.

Reserve for Earned but Unbilled Premiums

Generally speaking, earned but unbilled premiums (EBUP) represent management’s estimate of future additional or return premiums generated by parameters that are still unknown at the end of the year. As far as MTPL is concerned, EBUPs only exist for fleet, when the number of cars covered by the policy is still unknown at the end of the year.

EBUPs are generally based on estimated and actual figures provided by policyholders and by historical billing patterns adjusted for changes in regulations, pricing, and billing practices and procedures.

Reserve for Unexpired Risks

Reserve for unexpired risks (URR) is the amount set aside on the balance sheet in addition to unearned premiums with respect to risks to be borne by the insurer after the end of the reporting period. URR is intended to provide for all claims and expenses in connection with insurance contracts in force in excess of the related unearned premiums and any premiums receivable on those contracts. The need for this reserve is connected to the fact that the premium rates used to calculate UPR may be inadequate for various reasons (that is, the original rating calculations could have been wrong, the experience could have been worse than anticipated, or it could have been decided as a result of deliberate rate cutting). Having reserved only a proportionate UPR would mean that the UPR will be inadequate to meet the unexpired portion of the risk. An additional reserve is needed. The difficulty consists

in determining if the UPR is likely to be inadequate. For instance, the marketing director is unlikely to admit that premium rates were cut in order to gain market share.

There are various reasons why the (proportional) UPR could prove to be higher than anticipated, for example:

- The claims incidence (number of claims) could prove to be higher than anticipated.
- Inflation could prove to be higher and erode the purchasing power of the premium faster than expected.
- Expenses or acquisition costs could be different from those assumed in the premium calculation.

Reserving practitioners who analyze loss ratios in at least monthly or quarterly cohorts will usually pick up a deteriorating trend quickly. They will then try to understand the reasons for the deterioration in loss ratios. If the reasons are likely to affect adversely the unearned portion of the risks, a URR will be needed. The different methods for calculating URR are detailed in the appendix to this chapter.

Claims Reserving: Why and How?

Issues related to claim reserves are easily explained:

- At the end of the accounting year, not all the claims are settled and there is a need to reserve the cost of pending claims, meaning claims that are already reported to the company.
- Some of the claims are incurred but not yet reported (IBNR).
- The insurer will benefit from some recourses that are still unknown at the end of the year.
- The reinsurers will pay for part of the cost of claims, but the amount is still uncertain.

These four uncertainties have to be assessed within the balance sheet through appropriate reserves. Claim reserves are an issue in developing

countries because the claim settlement process is often much slower than in developed countries: only a moderate part of the claims that occurred in the year are settled before the end of the year. For instance, five years after occurrence, only 40 percent of total estimated costs of MTPL bodily injury claims have been paid in Tunisia, compared with 90 percent in France. This phenomenon is even clearer when looking at the part of the claims payment that is linked to that same year's claims occurrences: 62 percent in France, but only 2.5 percent in Morocco (although Morocco is a mature market in terms of insurance). In making this comparison, one should bear in mind that the French ratio includes many first-party physical damage claims, so the two types of coverage are not directly comparable.

The Operational Approach of Claims Reserving: The “File-by-File” Method

The basic approach of claims reserving relies on a file-by-file method. The reliability of the file-by-file approach of each company in each country depends on how it is applied.

Some companies apply a sophisticated process based on the comprehensive use of all the information derived from the past and the information available in each file regarding the casualties, the number of persons involved, and so forth. They try to identify the criteria that allow the claim manager to assess the final cost of each claim so that even if they have little information at the opening of the file, they are able to assess a fair value of the amount to be paid. In a case-by-case approach, the company will carry out the inspection using a computer program, or a claim assessor with the relevant experience will inspect each case. The assessor will weigh all relevant facts and place a value on the claim. He or she then will add on an amount sufficient to pay the direct expenses of the claim and an allowance to meet future inflation, according to when the claim payment is likely to take place. In this case, inflation will include the element of “court-award” inflation and the effect of any future legislative changes. Such a sophisticated approach is rare in developing countries, because it requires a detailed database of claims.

Many countries (Algeria or the Arab Republic of Egypt, for instance) simply multiply the number of pending claims by an average cost derived

from market statistics, calculated by the companies themselves (Algeria) or by the supervisory authority (Egypt). In some cases, this approach may be appropriate, when all the claims show the same characteristics; but if or when the claims are heterogeneous within the same year or change a lot compared to the year before, it could prove inadequate simply to apply a unique average cost to the number of claims.

It is the duty of any insurance supervisory authority to ensure that every company uses a fairly sophisticated file-by-file approach, taking into account all of the available information. This duty can be achieved through onsite inspections. Whenever the information collected by the company regarding past data is not sufficient, it is the duty of the supervisory authority to impose an improvement in the database of the company, which should have in house the minimum information needed to perform a claim reserve assessment.

FILE-BY-FILE APPROACH TO BE COMPLETED BY IBNR

However sophisticated it is, the file-by-file method does not take into account the IBNR claims. Those “late” claims are not recorded in the accounts because they have not yet been reported to the company, but they still belong to the year’s cost of claims because they have occurred during the year. IBNR claims depend on three elements:

- The period between the accident and the day the injured party contacts the insurance company of the responsible party. This period varies widely from case to case, depending on several factors (for instance, the extent of injuries of the person involved in the accident, the presence of relatives who can help in contacting the lawyer)
- The period of time needed by the court to understand the case, to determine responsibility, and to identify the insurance company, when the insured has not reported the accident to its insurer
- The period between the day the claim is reported to the insurance salesman and the day it is reported to the headquarters of the company. In emerging countries, this can take days or even months, particularly when there is no information technology system or when

the country is huge and the commercial network is poorly connected with the headquarters of the company. In Mali, for instance, given the inefficiency of Internet connections, most local insurers only centralize the claim files on a monthly basis, and it takes more than five days to travel by car from the north of the country to Bamako.

The issue of IBNR is therefore very important in assessing claim reserves. Effort must be focused on this issue, particularly in emerging countries where the process of reporting a claim to the insurance company is more complex and erratic. Therefore, IBNR tends to be higher in developing countries than in other countries.

IBNR ESTIMATION CALCULATION METHODOLOGIES

Usually, the IBNR issue is taken into account by insurance regulation through a whole-portfolio approach: in Algeria, for instance, an additional reserve for IBNR of 5 percent is applied to claim reserve. This additional reserve is 15 percent in Egypt. It is the same in Nigeria.

In francophone countries of Sub-Saharan Africa, IBNR claims are estimated through the average claims cost multiplied by the estimated number of “late” claims. A few emerging countries use a wide panel of methods to estimate IBNR cost: in Tunisia, the method of calculating IBNR claims takes into account different methods, such as average cost or settlement pace; in Morocco, it is even more refined.

This whole-portfolio assessment of IBNR is not sufficient and should be backed, within companies, by a statistical approach based on past experience: every company should be able to determine how many claims of each past accident year are reported in years afterward. This experience should be used to assess IBNR claims in the future.

The Basics of Actuarial Valuation: Statistical Methods Based on Historical Figures

Although the file-by-file approach described above is the most basic and the most reliable, it presents some weaknesses:

- It does not by itself take into account the IBNR claims, which require a complementary approach.
- It is not convenient when the number of claims is too large.
- Qualitative judgments from the claim assessors may cause inconsistencies, and this would be the case particularly for large claims where information may be incomplete.
- It would be difficult to prepare alternative estimates on different bases (for example, on different assumptions about future inflation).
- As new information comes in, the amount of reserves needs updating.

For all of these reasons, a statistical approach that groups together claims information is widely recommended to reinforce the file-by-file approach.

Summary

The discussion of appropriate statistical analytic approaches to MTPL insurance at a more detailed level is a lengthy and complex matter. Rather than labor the general reader with a detailed exposition that is appropriate only for the more specialist reader, we provide an extensive appendix to this chapter that outlines the key statistical issues and choices. This enables us to close this chapter with some summary comments.

In essence, a strong statistical basis is essential for the successful management of any MTPL framework. This is due to the following:

- Insurance is subject to the principles of inverse sequence, long time lag, and market cyclicity.
- Viable and sustainable MTPL insurance needs to be founded on intelligent and risk-related pricing foundations.

- Hence pricing it requires careful research and analysis.
- The expected cost of claims is a complex function of the underlying risk segments, inflation, and a large number of more detailed variables.
- Risk segmentation is desirable to promote consumer awareness of risk, but only a limited degree of segmentation can be achieved by government-sponsored insurers.
- Data collection is essential to a well-managed scheme.
- Inflation is a deeply complex subject founded in many variables and needs careful analysis if its impact on MTPL claims is to be properly understood.
- Commissions and costs need careful analysis.
- External reinsurance, capital issues, and financial revenues all need to be integrated in the complete actuarial model.
- Likewise, all forms of premium reserves and loss reserves need to be properly established and actuarially monitored.

With all of these in place, there is a sound foundation for a sophisticated actuarial analysis that will enable the pricing of MTPL to be conducted on a sustainable basis. This, in turn, will enable the MTPL insurance to fulfill its proper role in helping developing countries to manage their motor risks and gradually to improve their response to the challenge presented by motoring.

Appendix. Methods of Calculating Reserves

Many statistical approaches coexist, but they all rely on the same principle: the estimated amount of the reserves is forecasted through an analysis of the past, together with an hypothesis that some parameters are held constant. The basis of all this is the “runoff triangle.”

The Basics of Triangulation

The idea behind a runoff triangle is fairly simple: all of the claim figures (numbers or amounts) are classified by accident year (that is, the year when

Figure 3A.2. General Form of a Runoff Triangle

Accident year	Year of development									
	1	2	...	j	...	...	...	...	...	n
1	$C_{1,1}$	$C_{1,2}$	...	$C_{1,j}$	...	...	...	...	...	$C_{1,n}$
2	$C_{2,1}$	$C_{2,2}$	...	$C_{2,j}$	...	...	...	...	$C_{2,n-1}$	
...								
...								
...								
i	$C_{i,1}$	$C_{i,2}$	...	$C_{i,j}$	$C_{i,n-i}$					
...								
...								
...								
n	$C_{n,1}$	$C_{n,2}$								

from the past data and apply it to the future runoff of the incomplete claim years. In particular, it can be assumed that, for each “cohort” of claims (that is, all claims stemming from a common period of origin) the amount of payments still to be made is related in a stable manner to the amounts already paid on those claims. If necessary, an allowance can be made for any trends or changes from the base pattern (perhaps due to known variations in court practices or other legal developments) and for inflation.

In diagrammatic form, the company is concerned with projecting the data known to date (the area with the given figures) to the claim’s ultimate position, by completing the blank part of the square (see the numerical example in figure 3A.2). In other words, the runoff triangle is used to answer the following question: Given the information that we have, how can we foresee the information we do not have?

If the company is going to use the “triangle” of data as the basis of actuarial projection, it is important for the company to verify initially that the base data appear to be consistent from year to year and that the development of each cohort appears to follow a stable pattern.

The following disturbances may be observed in the data triangles:

- *By row.* This might indicate that the type of business (or claim) has altered between cohorts.

- *By column.* This would indicate a change in the development pattern, perhaps due to some change in administrative procedures.
- *By diagonal.* All items on a diagonal are processed in the same accounting year. A change may indicate some disturbances in processing.
- *In individual elements.* An exceptional claim or event may be present.

Generally, insurers assume that the pattern of cumulative claims incurred or paid is stable across the development years for each accident year when they calculate their loss reserves. Insurers tend to use a combination of several deterministic methods, the most widespread of which are described in the next section.

The Most Commonly Used Methods

This section describes the most frequently used methods: chain ladder based on paid-claim development method; chain ladder based on incurred-claim development method; inflation-adjusted paid-claim development method; and expected-claim ratio method.

CHAIN LADDER BASED ON PAID-CLAIM DEVELOPMENT METHOD

The chain ladder based on paid-claim development method assumes that the relative change in a given accident year's paid claims from one evaluation point to the next is similar to the relative change in prior accident years' paid claims at similar evaluation points. In using this method, historical evaluations of actual accident year paid claims are made in a manner similar to that shown below for the incurred-claim development method. Report-to-report development factors are then calculated, and selected factors are used to project the actual paid claims for any given accident year to the ultimate position.

This method differs from the incurred-claim development method in that the company's claim reserves are excluded from the analysis. This method

has the disadvantage of ignoring whatever information is provided by claim reserves, but it has the advantage of avoiding the distortions that might be reflected in the incurred-claim development method from abnormal increases or decreases in reserves.

This method's implicit assumption is that the rate of payment of claims has not changed materially over time. For slow reporting (or paying) coverage, this method can lead to erratic and unreliable projections, because a relatively small swing in early reporting (or payment) results in a very large swing in ultimate projections.

CHAIN LADDER, INCURRED-CLAIM DEVELOPMENT METHOD

The incurred-claim development method is based on the assumption that the relative change in a given accident year's incurred-claim estimates from one evaluation point to the next is similar to the relative change in prior accident years' incurred-claim estimates at similar evaluation points. In using this method, actual historical accident year incurred-claim data are evaluated at the end of each calendar year in a triangular fashion.

Report-to-report development factors are calculated to measure the relative development of an accident year from one evaluation point to the next. These historical report-to-report development factors and comparable industry factors are then used to select appropriate report-to-report development factors for use in projecting the incomplete accident years to the final payment.

This method's implicit assumption is that the relative adequacy of the company's outstanding reserves has been consistent over time and that there have been no material changes in the rate at which claims have been reported and paid.

INFLATION: ADJUSTED PAID-CLAIM DEVELOPMENT METHOD

This method inflates past claim payments to a "reference year" value, using an appropriate index of claims inflation. The development factors are then calculated as for the paid-claim development method. Appropriate factors

are selected, considering the trends in the values and the proportion of claims outstanding. Using these factors, the future paid claims in the reference year values are estimated. The payment pattern derived from the development factors is used to calculate the amounts paid in each future development year, in the reference year values. These amounts paid are projected to their monetary values by applying the assumed levels of future claims inflation. The outstanding liability is the sum of these future payments.

The widely used chain ladder method presents, however, some problems:

- It could be unreliable when used over too many years, since claim reserves have distributions with a long tail leading off to the right. This long-tail peculiarity cannot be fully captured by these methods, which can lead to under-reserving.
- It is deterministic and only gives point results, without taking estimation and statistical errors into account. This means that it is not possible to measure the reliability of the reserve estimate using (for example) confidence intervals.

This becomes particularly important for the most recent accident year, which only lists the claims incurred for the year itself. Using the chain ladder method to calculate reserves yields a number that is subject to a higher level of uncertainty and hence wider fluctuations. Generally—this is particularly true if the company is growing—the claim reserves estimate for the most recent year will be larger than any other amount in the data set for any other accident year. Consequently, even a small variation in the initial amount could lead the insurer to over- or under-reserve by large amounts.

These problems could make the chain ladder method inappropriate when dealing with cases where claims are announced or settled very slowly (for example, when only 10 percent of total claims are settled in the first year).

CLAIM SETTLEMENT RATE METHOD

This method predicts the total amount needed to pay for accidents that have occurred during the fiscal year on the basis of two variables: (a) payments already made and (b) the rate of claim settlement.

The claim settlement rate is the link between the amount already paid and the final amount for all accidents.

- Cumulative payments are arranged in a trapezoid by accident year and development year.
- The claim settlement rate for year i at time $i + j$ is calculated by dividing the cumulative payments at time $i + j$ by the total amount of settlements (including provisions) for the accident year (for as many years as payments keep coming in).
- For a particular accident year k (in a set where the first year is 1), the average claim settlement rate is calculated for the years 1 through $k - 1$, and this rate is used to calculate what percentage of settlements has already been paid for k . This percentage is subtracted from the predicted total amount of settlements to give loss reserves.

EXPECTED-CLAIM RATIO METHOD

Under the expected-claim method, ultimate claims are based on some prior measure of anticipated claims, usually relative to some measure of exposure, such as premiums. Since actual claims do not enter into the calculations, this method has the advantage of stability over time. The ultimate claim estimate does not change unless the premium or the claim ratio changes. However, the advantage of stability is offset by a lack of responsiveness. In effect, the method ignores actual claim experience as it is reported.

AVERAGE COST METHOD, TAKING INTO ACCOUNT POSSIBLE INFLATIONARY BIAS

The average cost method predicts the total amount to be paid for disasters in a fiscal year, on the basis of the average costs of the disasters that have taken place in earlier fiscal years, applying to them either a market rate of inflation or the rate of inflation observed in the past by the insurer.

There are three steps:

- Predict the total number of disasters per accident year, at the point when all accidents that have taken place in the previous year have not yet been reported
- Predict the average cost of disasters occurring in the most recent accident years based on the average costs of disasters in older accident years
- Calculate loss reserves by subtracting the payments already made for the accident year in question from the product of the predicted number of disasters by the predicted average cost.

LIQUIDATIVE METHOD

The liquidative method and its variants assume that the past pattern seen in an insurer's loss reserves—that is, either a surplus or a loss—can be projected into the future.

There are four steps:

- Evaluate the total expenditures of the insurer at the end of each year for each accident year
- Calculate the surplus or loss of the insurer for each accident year
- Take the average of these surpluses or losses for each accident year
- Use the average surplus as the projected surplus or loss for the next accident year.

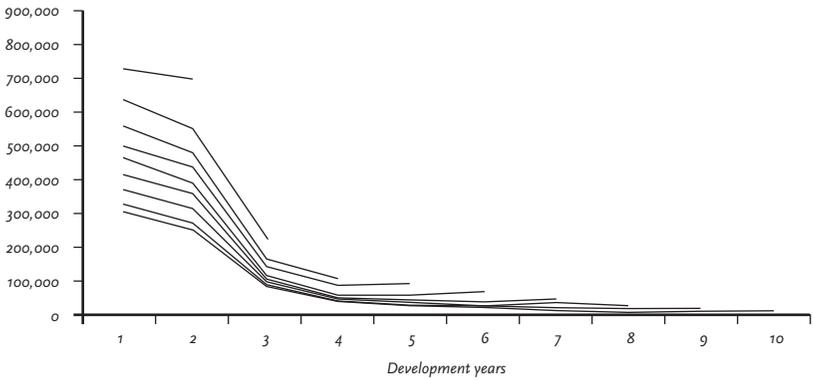
Difficulties of Reserving in Emerging Countries

The uncertainties of claims reserving are reinforced in emerging countries by the low claim settlement process.

PROBLEM 1: LITTLE INFORMATION IN THE FIRST YEARS

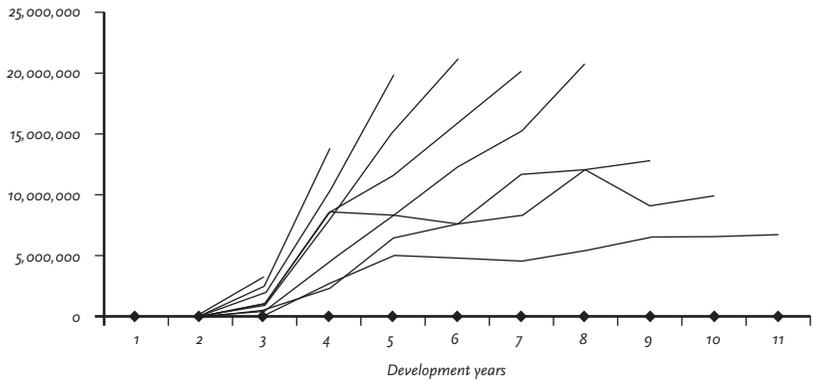
While historical information on five to 10 years of development could be regarded as a sufficiently long time for the assessment of reserves (for instance,

Figure 3A.3. Incremental Payments in France, by Development and Accident Years



Note: Each line represents an accident year. The longer the line the older the year.

Figure 3A.4. Incremental Payments in Arab Republic of Egypt, by Development and Accident Years



Note: Each line represents an accident year. The longer the line the older the year.

in Europe), there is still a substantial amount of payments that remain to be made in emerging countries. Figures 3A.3 and 3A.4 illustrate this point. This implies a greater uncertainty in the estimation of claim reserves, in particular

linked with the selection of the tail factor in the runoff triangle of claims paid, which is the most relevant factor that brings all the other selections “to the ultimate payment.”

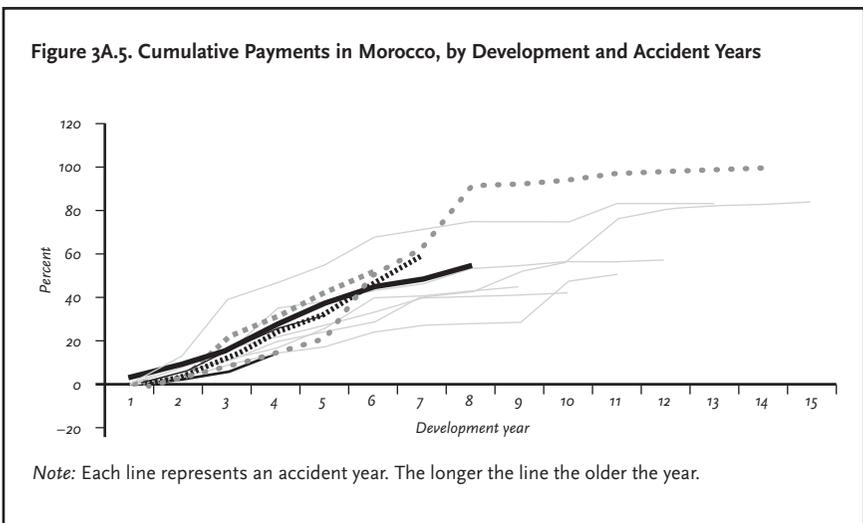
The solution is to continue to improve and extend the data gathered so far in order to dispose of reliable and appropriate databases.

PROBLEM 2: IRREGULARITY OF CLAIM DEVELOPMENT STEP CADENCE

Since a statistical method is based on taking some pattern from past data and projecting it into the future, it will be unreliable if the assumption of a stable pattern is not fulfilled.

Figure 3A.5 shows that cumulative payments can vary a lot among different occurrence years: for instance, in MTPL in Morocco, after five years, 55 percent of 1995 claims (black vertical dashed line) are paid, while only 17 percent of 1997 claims are paid (gray dashed line); after 10 years, 94 percent of 1994 claims are paid (gray dotted line) compared with only 47 percent of 1997 claims (dark solid line).

This is an open issue for short-tail business; in the case of long-tail business, the need to dispose of many “old” years of occurrence (when the claims



settlement processes were probably different) could, however, be more relevant. Actuarial judgment and the use of several methods should be enough to produce a more stable basis or reliable projection. It is therefore necessary to examine critically the data and the factors derived from the runoff triangle, supplementing the analysis with additional qualitative information derived from a discussion with claims and underwriting staff.

PROBLEM 3: EVOLUTION OF AVERAGE COST

For long-tail classes, especially when bodily injury losses are involved, claims inflation is usually higher than monetary inflation, and it changes every year in the future. In this case, it is possible to use actuarial methods that involve an adequate index to allow for this factor in the estimates; assumptions should be made both for the past years but also—and especially—for future years (for this, the level of uncertainty is clearly higher than for the past).

A specific problem relates to the observed experience that court-award inflation actually varies with the size of claim: the inflation of small-size claims generally has a lower impact on cost inflation than that of large-size claims.

PROBLEM 4: THE INCREASING FRAGILITY OF FORECASTS WITH THE SLOW CLAIM SETTLEMENT PROCESS

Finally, there is a specific problem due to the fact that we have a long-tail process combined with information limited to the first four to five development years. Reducing the speed of payment has two consequences for the actuarial assessment: it decreases the *known* information that is the base of the forecast, and it increases the *unknown* information that has to be forecast. The weakness of the forecast increases very rapidly.

To be more explicit, let us take a shape where the insurer would pay 60 percent of the total claims in the first year. If the first-year payment is €1, the impact on the claim reserve is only €0.67 (40 percent / 60 percent). But if the shape is such that the insurer pays only 10 percent in the first year, the potential mistake of €1 in the first-year payment results in a mistake in the

claim reserve itself of €9 (90 percent / 10 percent). So in a short-tail process, a mistake of €1 in initial data results in a mistake of €0.66, whereas in a long-tail process, a mistake of €1 results in a mistake of €9 in the final result. These specific problems have a big impact on the financial statements of the company.

A slow claim settlement process increases the number of accident years that are reserved in the balance sheet at the end of any accounting year. This is a mechanical impact: the longer the settlement process, the bigger the liability of the company.

Bigger claim reserves weaken the reliability of the profit and loss account of the company. If the claim reserve represents 10 times the premium, any slight uncertainty about its value can dramatically affect the profitability of the company.

Other Specific Issues in Emerging Countries

The methods imposed by the law are not always coherent. Methods of calculating regulatory loss reserves are often insufficient and restrictive. However, they are mandatory and therefore predominant over internal actuarial estimations.

In Egypt, insurance companies assess their claim reserves through a single formula based on the number of dead and injured multiplied by an average cost. A drawback of this method arises due to the binary approach of claims (injury or death); a more detailed spectrum of cases is needed (for instance, the level of disability). A second drawback arises due to the way the average costs of injury and death are estimated (average computation of the mean cost from all the companies over the last three years), raising issues related to the absence of an inflationary trend and the heterogeneity of companies. The disadvantage of a global additional reserve for IBNR is detailed above.

Before the last reform in Morocco, the set of rules had several drawbacks, some of which are evident in Egypt now:

- The typology of branches was not optimum for statistical work: it either was not homogeneous enough or, on the contrary, was too restrictive and not robust enough.

- The average-cost method suffered from some restrictions: when applied on past average cost, it could not take into account the inflationary trend.
- Methods based on runoff triangles did not include the capping of claims.
- Statistical methods included average cost and claim development families but were not based on the loss ratio or on the liquidative principle.

Data are often not reliable or even available. Availability of data is an important issue when applying the methods presented above. In Egypt, no triangle based on accident year is available. In other cases, the number of accident years available is very limited. In these cases, the estimates of future claims payments are based on the company's historical experience, but they have to be supplemented by qualitative information acquired through interviews with the management of companies, knowledge of the local market, and use of benchmarks.

Beyond the question of availability, actuaries face the uneven quality of underlying information and have to test the reliability of data (coherence between technical data and accounting data or coherence between flows and stocks of different values). It may also be necessary to segment the portfolio.

Last but not least, as said before, the underlying hypothesis of actuarial calculation of claim reserves is the fact that the process of claims settlement remains constant. Therefore, the actuaries have to track and identify any circumstance that may disrupt the process. Changes in regulation or in the process of reaching a judgment or a legal settlement are examples of these circumstances. For instance, in Morocco, the delay between occurrence and judgment ranges from 4.5 years for claims occurring in 1993 to 2.5 years for claims occurring in 2001. At the same time, delay between judgment and settlement declined from more than two years to less than one year. Overall, in 15 years, the MTPL whole-portfolio settlement process in Morocco gained six months on average every year. This has had a huge impact on the calculation of reserves in this country and has made the actuarial calculation weak and fragile.

The Inflation Biases

Emerging countries often face high inflation rates, linked to their booming growth and macroeconomic disorder. In this context, estimating claim reserves becomes more difficult, as most statistical techniques assume that past monetary figures are stable and can be used to forecast the future. The previous section points out several solutions in order to annihilate the inflation bias by using an appropriate index of claims inflation and considering the trends in the values.

Audit of the Claims Settlement Process

Before discussing the data available and, hence, the ideal methods for assessing the ultimate value of claim reserves, the actuary has to examine the individual steps followed: first, in the payment of the premium and, second, in the payment and management of the claim when this occurs. Both of these processes are very specific in each country and might be relevant to the final understanding of the conclusions and the analyses.

The claims process is very much determined by two aspects:

- The predominance of courts' decisions regarding the amount to be reimbursed to the injured party and the time needed to recognize the responsibility
- The difficulty, in some cases, of identifying the driver responsible for the accident; this fact leads the actuary to split the incidents into two different cases: in the first case, the party at fault of the accident is *known* or there are witnesses who could record the car's plate number; in the second case, the party at fault is *unknown*.

Several pieces of information are especially important: date of notification to the court, date of first notification to the insurance company, date of recognition of the real company responsible for the claim, date of taking charge of the claim by the insurance company, date of the court's decision, date of communication of the court's decision to the insurance company, and date of settlement of the claim by the insurance company.

The claim settlement process needs to be restructured. At the company level, in-depth restructuring can be proposed, setting up clear responsibilities among companies, giving transparency in the channels of information, and making sure that the reserving process is coherent with the claims settlement process. Among other issues, this restructuring should clarify the way in which companies (a) set their reserves when they are informed of a claim and (b) withdraw the same reserves over the time.

Claims Capping and Other Retroprocessing

Large claims introduce an additional bias in the statistical analysis of the runoff triangle. In order to extract a pattern for loss development, the actuary should make sure that data are workable and reinforce the stability and robustness of runoff triangles.

Given their importance within the historic runoff of motor claims, large claims should be removed from the triangles, because they induce distortions in average costs, pace of payment development, and liquidation profiles. Removing these claims from the portfolio, or lessening their impact, allows classical statistical methods to be used for mass claims. For claims above the cap, a separate methodology has to be applied in order to simulate the claim reserves. Claim reserves should even be assessed individually for very large claims. Other retroprocessing is to be considered, such as the correction of certain aberrant data.

Implementation of Methods of Calculating Reserves

This section gives a more detailed approach to implementation of the various actuarial methods of calculating claim reserves. Although the mathematical formula may seem a little esoteric, it expresses simple ideas, can be easily computerized, and is simple to use.

METHODS OF CALCULATING UPR

Four proportionate methods of calculating the unearned premium reserve can be used, and they depend on the grouping of the base dates (for example, daily or monthly).

First, the most accurate method that could be applied uses the day of inception of the policy. A policy beginning on October 6 will have earned 86/365ths by December 31, that is, 25 days in October, 30 days in November, and 31 days in December. This portion of the premium is accordingly treated as earned. The unearned portion (279/365ths) is carried forward to be earned in the succeeding period. Unless the portfolio is small, this method can be used only with computerized records, since a separate calculation is needed for each policy.

Second, a similar method, with a slightly less accurate result, takes into account the month of inception or renewal. In this case, every policy issued or renewed in that month is assumed to begin in the middle of the month. Thus the October 6 policy is assumed to begin midway through October and by year-end is considered to be 5/24ths earned. This method is used where only monthly information is available or where the calculation has to be undertaken manually. It is referred to as the 24ths method.

The apportionment of the premium is summarized in the following table for a policy written in month m of the accounting period:

<i>Month</i>	<i>Accounting year</i>	<i>Consecutive year</i>
1	0.9583 (23/24)	0.0417 (1/24)
2	0.8750 (21/24)	0.1250 (3/24)
3	0.7917 (19/24)	0.2083 (5/24)
4	0.7083 (17/24)	0.2917 (7/24)
5	0.6250 (15/24)	0.3750 (9/24)
6	0.5417 (13/24)	0.4583 (11/24)
7	0.4583 (11/24)	0.5417 (13/24)
8	0.3750 (9/24)	0.6250 (15/24)
9	0.2917 (7/24)	0.7083 (17/24)
10	0.2083 (5/24)	0.7917 (19/24)
11	0.1250 (3/24)	0.8750 (21/24)
12	0.0417 (1/24)	0.9583 (23/24)

According to the 24ths method, the UPR for an annual policy written in month m of the accounting-year period is as follows:

$$[(2m - 1) / 24] \times P(1 - k),$$

where P is the annual gross premium and k allows for the acquisition expenses. The deduction of k is done with respect to the acquisition costs that are incurred at the point where the premium is received. Profit margins, claims-handling costs, and expenses of servicing business are implicitly apportioned between the years.

Third, the 8ths method is equivalent to the second method described but is applied when policy dates are grouped within quarters of the year. Then, for instance, policies whose inception dates are grouped within the third quarter are assumed to contribute 3/8ths of a year to that year and so on.

The fourth method follows the principle of the previous two, but is applied to the whole year. Thus all policies are assumed to begin on July 1 and to have earned half a year by year-end. This is clearly less accurate.

We can easily compare the accuracy of the various methods. For example, a policy begun on October 6 will have earned as follows as of December 31 with the various time units used:

Year	Halves basis	50.0%	50.0% (1/2)
Quarter	Eighth basis	12.5%	87.5% (7/8)
Month	24ths basis	20.8%	79.2% (19/24)
Day	Daily basis	23.6%	76.4% (279/365)

METHODS OF CALCULATING URR

The UPR, being a simple proportion of the written premium, may be inadequate if the premium itself is insufficient to cover the cost of the risk and management expenses over the entire term of contract. Hence an upward adjustment may be needed. This increment is known as the additional reserve for unexpired risks (URR). The URR will only be required if the UPR is expected to be inadequate to meet the attributable claims and expenses when they take place.

If it can be demonstrated that the earned portion of the premium has been insufficient to pay for claims, expenses, and commissions, then it is likely that the UPR will also be insufficient. We are now speaking of the earned portion of the premiums in respect of which the UPR is considered. In other words, it is not the same as the total earned premiums for the last year. The risks in terms of the UPR carried forward at the beginning of the year are not taken into account for this purpose.

The earned portion of the accounting year analyzed needs to be studied as follows:

- a. Determine claims paid, IBNR, and outstanding claims on the earned portion only, that is, not taking into account claims that have been met out of the previous years' UPR, outstanding claim reserves, and IBNR
- b. Determine expenses (not acquisition costs) related to the earned portion of the premiums
- c. Determine the portion of written premiums (less acquisition costs) earned in the year.

If $(a + b) > c$, then a URR is necessary and is set at the following:

$$\text{UPR} \times [(a + b) / (c - 1)].$$

To calculate a , b , and c is often very cumbersome. Hence an alternative, but unfortunately less accurate, approach could be applied:

- d. Loss ratio for the past year = claims incurred / earned premiums
(where claims incurred = claims paid plus increase in IBNR and outstanding claim reserves)
- e. "Available" ratio for the past five years = (last five years' earned premiums less acquisition costs less policy maintenance expenses) divided by last five years' earned premiums.

Earned premiums are gross of acquisition costs in both d and e. That is, they are equal to written premiums less increase in UPR, but UPR is net of acquisition costs.

We need to assess the ultimate claim reserve. For the sake of this exercise, let us assume that 100 percent of the claims are settled after 10 development years and that the pattern for future settlement can be derived from the past one.

Step 1. From the triangle of incremental paid claims, it is easy to calculate the triangle of “cumulative payments,” which will be as follows:

Accident year	Development years									
	1	2	3	4	5	6	7	8	9	10
1996	308,747	561,876	649,604	691,976	722,883	748,071	764,653	776,604	790,312	804,715
1997	332,545	607,336	700,335	744,344	774,703	806,199	832,220	855,335	878,053	
1998	374,604	688,371	788,575	839,337	878,565	910,281	949,571	981,180		
1999	419,047	779,111	884,818	939,268	985,783	1,029,304				
2000	465,540	856,814	976,215	1,038,190	1,095,525	1,164,099				
2001	499,792	939,625	1,083,628	1,174,573	1,269,743					
2002	562,560	1,043,447	1,209,538	1,320,997						
2003	639,330	1,189,959	1,416,561							
2004	727,822	1,424,002								
2005	788,124									

Step 2. It is necessary to calculate the “development factor” linking year 2 to year 1 for accident years 1996 to 2004:

Accident year	Cumulative payments of development year		
	1	2	2/1 factor
1996	308,747	561,876	1,820
1997	332,545	607,336	1,826
1998	374,604	688,371	1,838
1999	419,047	779,111	1,859
2000	465,540	856,814	1,840
2001	499,792	939,625	1,880
2002	562,560	1,043,447	1,855
2003	639,330	1,189,959	1,861
2004	727,822	1,424,002	1,957

Step 3. The normal average of these factors is 1.86, and the weighted average is 1.869. Therefore, we can assume that a fair or conservative value of this factor is 1.9.

Steps 7 and after. The same method can be applied to forecast all future cumulative payments up to the last development year and then the incremental payments:

Cumulative payments:

Accident year	Development years									
	1	2	3	4	5	6	7	8	9	10
1996	308,747	561,876	649,604	691,976	722,883	748,071	764,653	776,604	790,312	804,713
1997	332,545	607,356	700,335	744,344	774,793	806,199	832,220	855,333	876,053	891,224
1998	374,604	688,371	788,575	839,337	878,565	910,281	949,571	981,180	1,000,804	1,015,816
1999	419,047	779,111	884,818	939,268	981,783	1,029,304	1,078,360	1,105,545	1,127,656	1,144,570
2000	465,540	896,814	976,215	1,038,190	1,095,525	1,164,099	1,210,663	1,240,929	1,265,748	1,284,734
2001	499,792	939,625	1,083,628	1,174,373	1,249,743	1,333,230	1,386,559	1,421,223	1,449,648	1,471,392
2002	562,960	1,043,447	1,209,338	1,320,997	1,400,27	1,470,270	1,529,080	1,567,307	1,595,954	1,622,633
2003	639,330	1,189,959	1,416,361	1,598,886	1,681,679	1,700,765	1,770,874	1,815,146	1,851,449	1,879,220
2004	727,822	1,399,799	1,642,298	1,859,989	1,989,009	1,989,380	2,065,003	2,116,668	2,158,961	2,191,345
2005	788,124	1,497,436	1,728,041	1,879,988	1,988,547	2,078,974	2,171,493	2,225,780	2,270,396	2,304,351

Incremental payments:

Accident year	Development years									
	1	2	3	4	5	6	7	8	9	10
1996	308,747	253,128	87,730	43,371	30,908	25,188	16,582	11,931	13,708	14,404
1997	332,545	274,797	92,099	44,008	30,359	31,496	26,022	23,114	22,779	13,171
1998	374,604	313,766	100,205	50,762	39,238	31,715	39,291	31,609	19,664	15,012
1999	419,047	360,064	105,707	54,495	46,515	43,522	49,276	26,665	22,111	16,915
2000	465,540	391,274	119,400	51,975	37,336	68,573	46,654	30,267	24,819	18,986
2001	499,792	439,834	144,403	93,945	95,170	63,487	53,370	34,664	28,424	21,745
2002	562,960	480,887	166,091	111,459	79,260	70,013	58,811	38,227	31,346	29,880
2003	639,330	550,629	216,602	113,325	91,793	81,084	68,111	44,272	33,309	27,772
2004	727,822	626,856	219,296	140,691	107,099	94,631	79,423	51,625	42,333	32,384
2005	788,124	709,312	230,605	147,047	112,599	99,427	83,519	54,287	44,516	34,054

709,312
= 1,497,436 - 788,124

Based on these figures, it is possible to calculate the value of ultimate payments as a percentage of already paid claims for each accident year:

Accident year	Past payments		Ultimate payments
	In value	As a % of ultimate payments	
1996	804,715	100.0	804,715
1997	878,053	98.5	891,224
1998	981,180	96.6	1,015,816
1999	1,078,580	94.2	1,144,570
2000	1,164,099	90.6	1,284,734
2001	1,269,743	86.3	1,471,392
2002	1,320,997	81.4	1,622,633
2003	1,416,561	75.4	1,879,220
2004	1,424,002	65.0	2,191,345
2005	788,124	34.2	2,304,351
Total	11,126,055		14,610,000

Final step. The difference between ultimate payments and past payments is the value of outstanding claims, including IBNR claims: claim reserve = 14,610,000 - 11,126,055 = 3,483,945.

Alternative Statistical Methods for Assessing Claim Reserves

The alternative methods presented here are in addition to the methods detailed above.

LONDON CHAIN

We summarize the chain ladder method again here, since it is used to derive the London chain method and some of the following methods. The chain ladder model takes the following form:

$$S_{i,k} = F_k S_{i,k-1} + \varepsilon_k \text{ with } \text{Var}[\varepsilon] = \sigma^2 S_{i,k-1}$$

$$F_k = \frac{\sum_{i=0}^{i=n-k} S_{i,k}}{\sum_{i=0}^{i=n-k} S_{i,k-1}}$$

where $S_{i,k}$ is cumulative settlements for accidents occurring in accident year i and observed at the end of development year k (development year = year of observation – accident year) and $F_{i,k} = S_{i,k} / S_{i,k-1}$. The form of the London chain model is the same as that of the chain ladder model, with the addition of a constant. The form of the model is $S_{i,k} = F_k S_{i,k-1} + a_k + \varepsilon_k$.

LONDON PIVOT

This model seeks to strike a balance between the chain ladder and London chain approach. The form of the model is $S_{i,k} + a_k = F_k (S_{i,k-1} + a_k) + \varepsilon_k$.

BORNHUETTER-FERGUSON

This model uses a constant of exposure to risk, E_i , which is generally equal to the premiums earned. The following form of the model is used to calculate the claim reserves for accident year i :

$$R_i = S_{i,n} - S_{i,k} = (1 - \beta_k) \times \varphi_i \times E_i$$

where $\beta_k = S_{i,k} / S_{i,n}$, $S_{i,n}$ is the estimated costs obtained by chain ladder, and φ_i is a projected loss ratio (S/P).

The Bornhuetter-Ferguson (BF) method is essentially a blend of two other methods: the claim development method and the expected-claim method. The BF method combines these two methods by splitting expected claims into two pieces: expected reported (or paid) and expected unreported (or unpaid). As an accident year matures, the expected reported (or paid) claims are replaced by actual reported (or paid) claims, and the initial expected-claim assumption gradually becomes less important.

Two parameters need to be determined in order to apply the BF method: the initial expected loss ratio (IELR) and the expected reporting (or payment) pattern.

Example. Let us assume that an incurred runoff triangle is as follows:

Accident year	Development year						Ult.
	0	1	2	3	4	5	
1	2,866	3,334	3,503	3,624	3,719	3,717	3,717
2	3,359	3,889	4,033	4,231	4,319		
3	3,848	4,503	4,779	4,946			
4	4,673	5,422	5,676				
5	5,369	6,142					
6	5,818						
Column total	25,933	23,290	17,991	12,801	8,038	3,717	3,717
Total: last element	20,115	17,148	12,315	7,855	3,719		
Ratio r	1.158	1.049	1.039	1.023	0.999	1.000	
Grossing-up factor (? r) = f	1.290	1.114	1.062	1.022	0.999	1.000	

The ratio r and the factor f are the same factors as those used in the chain ladder method. In fact, the factors could be used as explained above to derive the ultimate claims. For example, for accident year 6, the figure for incurred

claims is 5.818 for development year 0. Thus the estimate of the figure for ultimate claims for accident year 6 would be $5.818 \times 1,290 = 7.505$.

However, the BF method separates the known state from the emerging state. Let us continue with accident year 6 for a moment. It is known that the incurred claims are 5.818. Deducting this amount from the amount of the ultimate claims for accident year 6 would yield the emerging incurred claims. Since we are trying to determine the figure for ultimate claims, it is important to find a method on how to proceed.

Bornhuetter and Ferguson suggested using a “population” of ultimate loss ratio as a preliminary best estimate. Suppose that this loss ratio is 83 percent of earned premiums and the table of premiums is as follows:

Indicator	Accident year					
	1	2	3	4	5	6
$E_i = \text{earned premiums for}$ <i>accident year 1</i>	4,486	5,024	5,680	6,590	7,482	8,502

Our initial estimate of the ultimate claims for accident year 6 would be $8.502 \times 83 \text{ percent} = 7.057$. If we assume that the patterns of the recent past will continue into the future, we can derive an estimate of the unknown future liability by using our initial, or base, estimate for the ultimate claims (7.057 for accident year 6).

Dividing 7.057 by our grossing-up factor of 1,290 will give us the “expected” amount incurred: $7.057 / 1,290 = 5.470$. Subtract this from 7.057, and the estimate for unknown future liability is as follows: $7.057 - 5.470 = 1.587$.

We can add on the known incurred claims from the past, 5.818, to give our total estimate of the ultimate claims for accident year 6: $1.587 + 5.818 = 7.405$ (ultimate loss for accident year 6).

What we have done is to take $(1 - \beta) \times \phi \times E$, with $\beta = 1 / f$, $\phi =$ initial expected loss ratio, and $E =$ earned premiums, and add known incurred claims.

CAPE CODE

This model is derived from the Bornhuetter-Ferguson model. The form of the model is $R_i = S_{i,n} - S_{i,k} = (1 - \beta_k) \rho_i E_i$. The difference between the two

models is the term ρ_p , which represents a loss ratio that is not projected but is calculated from the runoff triangle by the following:

$$\rho_i = \sum_k S_{k,n-k+1} \quad \rho_i = \sum_k \beta_{n-k+1} E_k$$

(the years used in the summation are the years “comparable” to i).

FACTORIAL METHOD

The form of the model is $S_{i,k} - S_{i,k-1} = R_i D_k \epsilon_{i,k}$.

TAYLOR SEPARATION METHOD

The separation method seeks to distinguish two patterns in the claims data from one another. These are the development pattern for the (a) accident year and (b) calendar year effects, of which inflation is usually the most important. The first pattern works across the columns of the development table; the second pattern operates on the diagonals of the table. The data are analyzed to reveal their own intrinsic inflation. This structure can then be extended so as to generate data values for future years, which can be in keeping with the existing data or modified to take into account different hypotheses for future inflation.

This approach is derived from the factorial model, which allows us to take inflation into account. The form of the model is as follows:

$$S_{i,k} - S_{i,k-1} = y_k \lambda_{i+k}$$

λ_{i+k} is a parameter linked to the calendar year (that is, the diagonal of the runoff triangle).

y_k and λ_{i+k} can be determined in a unique way on the basis of the diagonal sums and the columns of the runoff triangle.

$$\text{Diagonal sums: } d_l = \sum_{i=0}^l S_{i,l-i} = \lambda_l \sum_{i=0}^l y_i$$

$$\text{Column sums: } v_j = \sum_{i=0}^{n-j} S_{i,j-i} = y_j \sum_{i=0}^n \lambda_i$$

The following is an example of the separation method.

Cumulative paid

<i>Accident year</i>	<i>Development year</i>					<i>Ultimate payments</i>
	1	2	3	4	5	
2003	29,791	52,054	54,889	55,267	55,345	55,345
2004	28,620	31,130	48,885	57,141		
2005	27,935	40,060	49,962			
2006	37,661	47,683				
2007	19,619					

Annual inflation

2004/2003	10.0%
2005/2004	10.0%
2006/2005	10.0%
2007/2006	10.0%
Future inflation rate	10.0%

Number of claims reported in first year

2003	40
2004	50
2005	19
2006	38
2007	17

Incremental paid claims

<i>Accident year</i>	<i>Development year</i>				
	1	2	3	4	5
2003	29,791	22,263	2,835	378	78
2004	28,620	2,510	17,755	8,256	
2005	27,935	12,125	9,902		
2006	37,661	10,022			
2007	19,619				

Average payment per claim

Accident year	Development year				
	1	2	3	4	5
2003	744.78	556.58	70.88	9.45	1.95
2004	572.40	50.20	355.10	165.12	
2005	1,470.26	638.16	521.16		
2006	991.08	263.40			
2007	1,154.06				
<i>Column sum</i>	4,932.58	4,508.67	947.13	174.57	1.95
<i>Diagonal sum</i>	744.78	1,128.98	1,591.34	1,993.79	2,106.02
$r_{(0)} \dot{i}_{(0)}$	$r_{(1)} \dot{i}_{(1)}$	$r_{(2)} \dot{i}_{(2)}$	$r_{(3)} \dot{i}_{(3)}$	$r_{(4)} \dot{i}_{(4)}$	
$r_{(0)} \dot{i}_{(1)}$	$r_{(1)} \dot{i}_{(2)}$	$r_{(2)} \dot{i}_{(3)}$	$r_{(3)} \dot{i}_{(4)}$		
$r_{(0)} \dot{i}_{(2)}$	$r_{(1)} \dot{i}_{(3)}$	$r_{(2)} \dot{i}_{(4)}$			
$r_{(0)} \dot{i}_{(3)}$	$r_{(1)} \dot{i}_{(4)}$				
$r_{(0)} \dot{i}_{(4)}$					
$r_{(4)} \dot{i}_{(4)}$					1.95
$\dot{i}_{(4)}$					2,106.02
$r_{(4)}$					0.00
$r_{(3)}^* (\dot{i}_{(3)} + \dot{i}_{(4)})$					174.57
$\dot{i}_{(3)}$					1,995.63
$r_{(3)}$					0.04
$r_{(2)}^* (\dot{i}_{(2)} + \dot{i}_{(3)} + \dot{i}_{(4)})$					947.13
$\dot{i}_{(2)}$					1,663.69
$r_{(2)}$					0.16
$r_{(1)}^* (\dot{i}_{(1)} + \dot{i}_{(2)} + \dot{i}_{(3)} + \dot{i}_{(4)})$					1,508.67
$\dot{i}_{(1)}$					1,425.05
$r_{(1)}$					0.21
$r_{(0)}^* (\dot{i}_{(0)} + \dot{i}_{(1)} + \dot{i}_{(2)} + \dot{i}_{(3)} + \dot{i}_{(4)})$					4,932.58
$\dot{i}_{(0)}$					1,278.77
$r_{(0)}$					0.58

Implicit insurance rates

$i_{(1)}/i_{(0)}$	1.114
$i_{(2)}/i_{(1)}$	1.167
$i_{(3)}/i_{(2)}$	1.200
$i_{(4)}/i_{(3)}$	1.055
Annual rate (implicit)	13.3%
Future inflation (explicit)	10.0%

Projected payment per claim

			2.1
		98.6	2.4
	380.6	108.5	2.6
486.1	418.6	119.3	2.9

Projected year-by-year paid claims

				Outstanding claims reserves
			107.3	107
		1,873.4	44.8	1,918
	14,461.9	4,121.4	98.6	18,682
8,263.2	7,116.8	2,028.2	48.5	17,457
			Total	38,164

FISCHER LANGE METHOD

This method is an average claim-size method that calculates reserves directly (as opposed to calculating ultimate costs and then subtracting payments made to date). The average cost of a claim or those claims settled during the last 12 months is taken as a basis for future amounts to be settled. Each average cost is inflated to future values and is multiplied in each future period by the estimated number of claims that will be settled in each period. The claim reserves are calculated as the total of the future payments.

Stochastic Methods for Estimating Loss Reserves: Methods Based on a Claims Distribution Law, Independent from the Past

Deterministic methods fall short in estimating loss reserves for slow rates of repayment. Various problems prevent accurate estimation of reserves using deterministic methods:

- *Aberrant values* in the data set (due to unforeseen accidents of large magnitude, for example), which would skew the development factors
- *Incomplete runoff triangles* (if an insurer decides not to issue policies during a certain time period)
- *Uncertain homogeneity of the triangles*, due to rapid changes in the insurance, legal, or economic framework in which the insurer operates.

It is possible to mitigate some of these problems by using other methods of estimating reserves, particularly stochastic methods, as opposed to deterministic methods such as the chain ladder method.

Stochastic methods have several advantages over deterministic methods:

- They take into account the error involved in estimating the parameter.
- They take into account the statistical error inherent in predicting future claims.
- The fit of the model can be tested statistically (with a Q-Q plot).
- They allow the derivation of confidence intervals for the reserve (with a simulation).
- They have fewer parameters.
- They do not underestimate the reserve.

Several stochastic methods are available:

- Generalized chain ladder method
- Craighead exponential method
- Hoerl method
- De Vylder least squares method

- Verall lognormal method
- Jean Lemaire method.

CHAPTER 4

MTPL Guarantee Fund

Murat Dişçi and Serap O. Gönülal

At the heart of every property and casualty insurance contract lies a promise that, if misfortune strikes, insurance will step in to soften the blow by covering the losses suffered by the insured. Motor third-party liability (MTPL) insurance is intended to cover third-party claims when vehicles driven on public roads cause significant harm to human life or property. However, although the legal beneficiaries of the insurance may have the right to receive compensation, they, or a third-party victim, may not receive compensation as a result of unforeseen circumstances. Although insurance companies are expected to compensate victims, the state may have to intervene when the relevant insurer is insolvent or otherwise unable to pay or when the guilty driver (or vehicle) is uninsured or not identifiable. This intervention is normally done through a contingency fund (also called a guarantee fund) in the case of an insolvent insurer and either through a guarantee fund (sometimes the same as the insolvency fund) or a nominal defendant (which may be an individual or independent government entity) in the case of an uninsured and unidentified liable party. Guarantee funds and nominal defendants thus constitute a necessary safety net that operates as part of a coherent system of compulsory national MTPL insurance.

These problems are very material. At the level of the unidentified and uninsured, in most G-8 economies, these risks form between 2.5 and 5 percent of motor premiums as regards the annual volume of claims. In developing economies, these numbers can be much higher; in Brazil, as many as 60 percent of drivers were uninsured for much of the 1974–86 period, following which a determined effort to improve the collection of insurance premiums reduced the number of uninsured drivers to about 20 percent in the 1990s. Brazil is far from unusual in this regard.

The risk of insurer insolvency is also very material. According to a November 2005 A. M. Best study of insolvencies from 1969 to 2005 in the U.S. market, the leading cause of collapse was inadequate reserves for claims, which accounted for more than 38 percent of impairments among the 984 insolvencies studied. Rapid growth also played a major role, accounting for 16.5 percent of failures over the period studied, particularly during soft markets. Most insolvencies, according to A. M. Best, were related to some form of mismanagement. Data for 2003–05, which were analyzed separately, show that fraud can play a substantial role.

This chapter describes the purpose of guarantee funds, explains their general structure, funding, and method of operation, and presents the guidelines for their proper implementation. Since the two generic types of problem—unidentified or uninsured drivers, on the one hand, and insolvent insurers, on the other—are often addressed in quite different ways, the discussion is broken into separate sections. An appendix provides the broad outlines of the purpose and structure of Turkey's guarantee fund.

Unidentified and Uninsured Drivers

Insurance guarantee funds protect victims of accidents involving uninsured or hit-and-run drivers. According to the Motor Insurance Bureau (MIB) of the United Kingdom, which is in charge of compensating the victims of negligent uninsured or untraced motorists, three people every hour are injured by uninsured or untraced drivers in that country. The MIB claims-handling experts manage more than 30,000 claims every year for accidents involving uninsured vehicles and seek to settle the claims fairly and promptly. The

company also manages the motor insurance database, which is the central record of more than 34 million insured vehicles in the United Kingdom. The database is used principally by the police but also by the state and insurance companies as a key tool in combating fraud.

The guarantee fund may also deal with various issues, including the insolvency of insurance companies and the negative effects of uninsured driving, untraced drivers, and stolen vehicles. In countries such as Canada and the United States, guarantee funds may protect consumers of a wider range of insurance products, including life and health insurance in addition to MTPL coverage. However, because of the moral hazard created (that is, drivers and vehicle owners have less incentive to use better managed insurers), guarantee arrangements are seen as a poor policy choice in countries that do not also have strong regulatory and supervisory regimes.

The terms and conditions, scope of coverage, or type of policies included in the scheme will be defined by the regulations of the country concerned. The details of the financial structure of the fund will typically be the subject of detailed regulation.

In addition to national regulations, European Union motor insurance directives, specifically the second directive (Directive no. 84/5/EEC, December 30, 1983) and subsequent amendments, call for each member state to set up a guarantee fund to provide cover for accidents caused by uninsured or unidentified vehicles. The fourth directive refers to a guarantee fund as the body, established in each European Economic Area member state in accordance with the second directive, set up to compensate the victims of accidents caused by uninsured or unidentified vehicles.

Structure

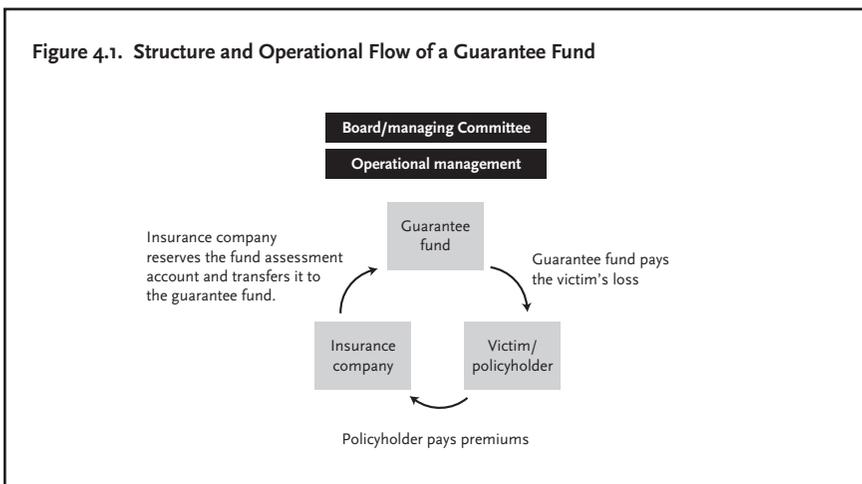
Guarantee funds are usually set up as nonprofit organizations under the control of the insurance supervisory authority or the relevant industry association. They are legal entities established by law for the purpose of paying certain policy claims of at-fault parties (in some countries where no-fault systems apply, the guarantee fund also pays not-at-fault claims), who either do not have proper insurance coverage or do not satisfy the legal require-

ments for coverage, and the claims of hit-and-run drivers, whose liabilities the insurance companies technically are not obliged to pay. In many ways, guarantee funds resemble the claims department of an insurance company.

The main legal framework is spelled out in a government regulation specific to the guarantee fund. The regulation should include details on the managerial bodies and their job descriptions, clarify the revenue and expenditures of the fund, describe the terms of use, and detail the process of evaluating and paying claims. Covered and uncovered claims and exclusions should be defined clearly in the regulation to avoid any possible disputes between the fund and claimants. An appendix to this chapter presents a sample, taken from Turkey, of a regulation creating and governing the operation of a guarantee fund for compulsory insurance.

Most guarantee funds are governed by a board of directors or a managing committee, which consists of representatives of member companies and, often, the state insurance authority. Salaried staff run the day-to-day operations of the fund. Some funds use third-party administrators, including randomly selected MTPL insurers, to settle claims, although the example of South Africa in the late 1980s and early 1990s shows that this is not always a successful model. The revenues and expenditures of the fund are audited periodically by the insurance supervisory authority or a similar national legal authority. A typical structure of operations and workflow is shown in figure 4.1.

Figure 4.1. Structure and Operational Flow of a Guarantee Fund



Funding

A common design is that all licensed insurers operating in the territory become “members” of a guarantee association. There are two main approaches to funding guarantee structures, one to levy fees in advance and the other to address the issue retrospectively.

Under one approach, members pay mandatory assessments up to a certain amount of net direct premiums written per year (known as pre-assessment in the United States). Regulations may give both the insurance companies and the insured the responsibility for paying the assessment. In that case, the insurer places an additional line item on the insurance policy premium. Collection, accounting, and remittance are the responsibility of the insurance company in accordance with the operational details spelled out in the government regulation.

The principle of fully funding the ultimate exposures (reserves and claims incurred but not reported) of a guarantee fund is not always observed and may not need to be observed. Many guarantee funds establish their estimated budgets for a 12-month period and ask members to contribute the mandatory assessments only to a level sufficient to meet the 12 months of estimated claims (perhaps with a small cash flow margin). This is a cheaper way to run a guarantee fund than the alternative of providing the fund with sufficient assets to meet the ultimate claims liabilities. The choice turns on the way the fund is established and regulated.

The alternative approach is *ex post* funding, known in the United States as post-assessment and recommended under the National Association of Insurance Commissioners Model Property/Casualty Guarantee Association Act. Under this approach, assessments are made after an insurer has legally been declared insolvent. New York is the only state in the United States that does not employ this approach for any line of business. Although this is viable in a country, or state, with many insurers and acceptable levels of industry concentration, it may be problematic in smaller and more concentrated markets.

Operation

Fund compensations are subject to both quantitative and qualitative limits. The regulation must define clearly the limits, terms, and conditions for coverage. MTPL guarantee funds generally pay three types of claims:

- *Hit-and-run accidents.* Guarantee funds usually cover the victims of hit-and-run accidents. Such funds usually compensate bodily injuries rather than property damage.
- *Accidents involving uninsured drivers.* Drivers are responsible for maintaining the liability coverage required by law. If a policyholder does not have enough coverage or a driver is uninsured, the fund pays the victims' claims and reserves the right to recover that amount from the at-fault party. Problems here include (a) driving where no insurance was ever purchased, (b) driving where the insurance has expired, and (c) driving where the insurance is invalidated through nondisclosure, misrepresentation, or breach of policy exclusion.
- *Stolen vehicles.* Victims of injuries caused by a vehicle that has been stolen, or used for criminal purposes by someone other than the owner, are eligible to receive payments from the guarantee fund because the owner of the vehicle may not be considered legally responsible.

Insolvent Insurers

Insurance supervisory authorities may set up a guarantee fund to protect consumers against the insolvency of a regulated insurer or other unforeseeable events. The supervisory authorities generally have the authority to recommend changes to correct the insurance companies' weaknesses, including requiring them to use actuaries, to improve their management of existing funds, and to project future funding needs. There may be other sources of assistance for insurers as well. In some countries, the guarantee fund may help insurance companies to strengthen their solvency position and, occasionally, may suggest that the company lower the cap on claims payments or take other precautions to prevent or manage insolvency.

Typically the regulatory response to insolvent insurers is first to protect consumers and then to protect the funds for personal injury compensation. It is common to provide 100 percent guarantees to the claimants for MTPL personal injury losses and, almost as common, to provide the same support for accidents at work. This arena is usually treated differently than the exposure to unidentified and uninsured drivers, being essentially part of the supervisory and regulatory role of the Ministry of Finance, even if, in some countries, there is an overlap. The challenges in unwinding an insolvent insurer's obligations, making good its assets, and making sure those assets are deployed to meet claimants in the right sequence of priority are complex, with wider interests at stake (such as maintaining public confidence in the financial system) than simply providing a safety net for individual unidentified and uninsured loss claimants.

Once payment has been made, the fund has the right to attempt to recover the amount paid either from the at-fault party or, in the case of insolvency, from the insurance company and its shareholders.

Guarantee Fund Deficits

For reasons mentioned elsewhere in this book, it is likely that the introduction of MTPL insurance will lead to pyramid structures and fraudulent activity in poorly regulated and supervised jurisdictions. Thus when stronger rules and oversight are eventually introduced to the market, it is likely that a number of MPTL insurers will need to be wound up, often with few assets remaining. For example, in Serbia 18 MTPL insurers closed (15 involuntarily) when the insurance supervision function was moved to the central bank. This immediately led to a deficit in the country's guarantee fund, which had been managed by the industry association. A similar situation occurred with workers compensation in New York.

Aside from raising the issue of who is responsible for making up the deficit (policyholders, other MTPL insurers, other guarantee funds, all drivers, the taxpayer, and so forth), this points to the need for guarantee funds to be introduced ideally only after an acceptable regulatory and supervisory regime has been installed. It also points to the need for the persons who manage

guarantee arrangements to work closely with the insurance supervisors. In this regard, Canada provides a best-practice example, with a written set of coordinated actions that takes into account the risk assessment attached to an insurer.

“Insurer Concerned” and Conclusion

The state has a strong role to play in improving road safety through the purposeful institution of motor insurance. A key feature in the implementation of an effective motor insurance framework is the minimization of uninsured and unidentified losses. For unidentified claims, greater interaction with the police is desirable, and this is discussed in a separate chapter. For the uninsured, much can be accomplished by putting the right pressure on insurers to play their own part. Some guarantee funds reach market agreements with the insurers regarding the prompt issuance of renewal notices: if insurers send out renewal offers too late, the policyholder may be on holiday and become uninsured unintentionally. Other forms of cooperation can be generated by the practice of forcing insurers to accept responsibility for paying claims as the “insurer concerned”—for example, by removing the insurer’s right to avoid liability for a stolen vehicle or removing the right to void a contract for nondisclosure or misrepresentation. The insurer can be given the right to pursue the policyholder and attempt to collect missing premiums or assets reflecting claims paid that would otherwise have been excluded or avoided. This type of pressure helps insurers to help their customers to work with the system.

The two problems—the risk of insurer insolvency and the problems of uninsured and unidentified drivers—are both very real and material issues in the MTPL field. A guarantee fund is a safety net both for citizens and for insurance companies. For this reason, it is important to design the regulations appropriately and to implement them consistently.

Appendix. An Example of Guarantee Fund Regulation

Part One. Purpose, Scope, Support, and Definitions

PURPOSE AND SCOPE

Article 1. (1). The purpose of this regulation is to establish principles regarding the institution and execution of a security account on the basis of Insurance Act no.; management of fund assets; payments to be made from the account; recourse to corresponding authorities and the State Motor Vehicle Bureau; an Information Center to be established on the basis of the same act, Article; the required contribution fee to the commission; and other expenses.

SUPPORT

Article 2. (1) This regulation is issued on the basis of Insurance Act no., Article

GLOSSARY

Article 3. (1) The following words and expressions shall have the specified meanings herein:

- a. *Information center:* The center instituted by the association according to Article, Insurance Act no.
- b. *Association:* Association of Insurance and Reinsurance Companies
- c. *Bureau:* State Motor Vehicle Bureau
- d. *Beneficiary:* Persons experiencing financial and physical damages as a result of risks within the scope of compulsory insurance and green card insurance
- e. *Account:* Security account
- f. *Act:* Insurance Act no.
- g. *Commission:* Insurance arbitration commission

- h. *Undersecretariat*: Insurance supervisory authority
- i. *Responsible person*: Persons judged to be at fault in cases where the risk is within the scope of compulsory insurance and green card insurance
- j. *Indemnification*: The monetary payments made for the purpose of settling the insurance claims falling within the scope of compulsory insurance and green card insurance
- k. *Green card insurance*: The insurance issued to provide liability insurance for motor vehicles operating according to the Europe Contract
- l. *Management committee*: Committee managing the account
- m. *Liable insurance company*: The insurance company that concludes the compulsory insurance contract and that is liable for covering damages that fall within the scope of coverage granted via this contract
- n. *Compulsory insurance*: Insurance within the scope of the act, Article no.

Part Two. Account Management and Audit

ACCOUNT MANAGEMENT COMMITTEE

Article 4. (1) An account having legal standing is institutionalized within the corporate structure of the association for the purpose of executing the duties specified in this regulation.

(2) The account shall be managed by the management committee, and the management committee shall be responsible for works and transactions regarding the account.

(3) The management committee shall have five members to be appointed as follows:

- a. *Chairman of management committee*: Association chairman
- b. *Deputy chairman of management committee*: General secretary of the association
- c. *Member of management committee*: One representative to be appointed by the association chairman from among the association employees having first-degree authority to sign for the association

- d. *Member of management committee:* One representative to be appointed by the undersecretariat
- e. *Member of management committee:* Account manager.

(4) The chairman of the management committee shall represent the account. If required, the chairman shall be authorized to entirely or partially assign to the deputy chairman of the management committee the authority to represent and bind the company.

(5) In the event that the chairman and/or any members of the management committee resign from their positions, their designations as committee members shall be terminated as of the date of resignation.

(6) The members of the management committee shall not receive any payment for performing their aforementioned duties.

(7) The management committee shall meet whenever deemed necessary, but not less than four times a year. The call for meeting shall be made as a result of the request of the chairman or a minimum of three members. The presence of one more than half of the management committee members is required to constitute a quorum. The decisions shall be adopted according to the majority of the participants. In the event of a tied vote, the position voted by the chairman shall be considered the majority.

DUTIES OF ACCOUNT MANAGEMENT COMMITTEE

Article 5. (1) The management committee shall execute the following duties regarding the operations of the Account:

- a. Reviewing information and documents in accordance with the related regulation and insurance industry procedures; assessing and resolving the applications made to the account as soon as possible and within the available resources
- b. Issuing and maintaining the documents in connection with the account revenues and expenditures
- c. Collecting the reimbursements and other expenses from responsible persons or filing recourse cases against these persons for this purpose

- d. Executing agreements, projects, and transactions regarding the purpose of the account
- e. Taking legal action against insurance companies that are delinquent in paying their assessment fees
- f. Ensuring management of account assets and incomes
- g. Appointing account personnel and determining employee personnel benefits and wages
- h. Conducting relationships with bankruptcy and liquidation administrators, committees, or offices in case of a bankrupt or liquidated insurance company
- i. Leasing and purchasing movable and immovable assets required for its activities
- j. Making an attempt before the related public office for the purpose of conducting the necessary procedures regarding persons who are within the scope of compulsory insurance but do not have a valid insurance policy
- k. Taking all precautions and concluding all decisions for present and future problems regarding the account transactions
- l. Performing all kinds of settlement, waiver, and release transactions including lawsuits and prosecutions regarding receivables of the account
- m. Carrying out works and transactions regarding the bureau, information center, and commission
- n. According to Article no. ... of the act, opening a separate account for every line of compulsory insurance and green card insurance and monitoring their revenues and expenditures
- o. When required, and with the approval of the undersecretariat, making transfers among the accounts specified in subparagraph ...
- p. Concluding necessary decisions for the purpose of duties assigned to the account according to the related regulation
- q. Confirming the parties authorized to act on behalf of the account and the procedures available to them.

ACCOUNT MANAGER AND OTHER PERSONNEL

Article 6. (1) The account manager shall be appointed by the undersecretariat among three members to be specified by the administrative board of the association. The account manager's term shall last for a period of three years.

(2) The account manager must have the qualifications required to be assigned as an assistant general manager responsible for an insurance business or line of insurance or reinsurance that is specified in the act, Article 4, paragraph 3.

(3) The account manager is responsible to the management committee for keeping the records and executing transactions in accordance with the related regulations and resolutions of the management committee.

(4) A sufficient number of personnel shall be employed on the basis of management committee resolution for the purpose of fulfilling the purposes and duties of the account.

ACCOUNT AUDIT

Article 7. (1) Incomes and expenses of the account as well as other transactions shall be audited by the undersecretariat every month.

Part Three. Financial Provisions

ACCOUNT INCOME

Article 8. (1) The revenues of the account are as follows:

- a. Contribution fees amounting to 1 percent of total net premiums collected by the insurance companies every year for compulsory insurance
- b. Contribution fees amounting to 1 percent of total net premiums collected by insurance companies every year for green card insurance

- c. Contribution fees amounting to 2 percent of net premiums deposited by parties holding compulsory insurance that is to be paid to the insurance companies
- d. Contribution fees amounting to 1 per 1,000 of the net premium amount deposited by parties holding green card insurance that is also paid to the insurance companies
- e. Funds recovered from at-fault parties or other sources
- f. Investment income
- g. Other income.

*CIRCUMSTANCES UNDER WHICH APPLICATIONS TO THE ACCOUNT
MAY BE MADE*

Article 9. (1) Applications may be made:

- a. For physical injuries to a victim when the identity of the insured cannot be confirmed
- b. For physical injuries caused by uninsured parties within the coverage limits applicable on the date of the occurrence
- c. For recovery of an amount equal to the difference between the compulsory insurance coverage limits and coverage amount specified in the insurance policy
- d. For an insurance company's outstanding liabilities for physical injuries or financial loss in the event that the licenses on all lines of insurance are canceled simultaneously as a result of financial weakness or bankruptcy of the insurance company
- e. For physical injuries of individuals involved in an accident with a stolen or damaged vehicle when the vehicle's owner is confirmed not to be responsible according to Act no.dated

(2) Furthermore, the Bureau might also apply for reimbursement for payments in respect of damages occurring within the territory of ... that are within the scope of green card insurance.

(3) The account is authorized to settle with or conclude agreements for settling with these companies provided that a mass assessment regarding the

recourse requests is placed by the insurance company on the basis of paragraph 1, subparagraph d. For this purpose, the payments made for insured parties, the name and surname of the insured, the policy number, the claim amount, and the company of recourse shall be recorded in the form of a list. *Under these circumstances, the company of recourse shall remove the execution and legal proceedings immediately that are applicable to the insured parties listed within the framework of recourse.*

EXPENSES OF THE ACCOUNT

Article 10. (1) The expenses of the account are as follows:

- a. Claims payments and expenses related to the claims payments
- b. The contribution to be made to the information center and the commission, if this contribution is required by the undersecretariat, and provided that it shall not exceed 5 per 1,000 of the fund amount accumulated as of the end of the previous year
- c. Legal expenses related to the lawsuits filed against the account or filed by the account
- d. Expenses regarding the wages and benefits of the account's staff, or other expenses related to the processing of transactions.

GREEN CARD INSURANCE

Article 11. (1) The claim files of the accidents that occur within the country that are within the scope of international green card insurance and are settled by the local Green Card Bureau shall be paid by the account.

(2) The collections made by the bureau according to the related regulation regarding the claims paid from the account within the scope of this article shall be transferred to the account within no more than three days.

PAYMENT OF CONTRIBUTION FEE AND DEFAULT INTEREST

Article 12. (1) For any calendar year, the insurance companies are obliged to deposit their contribution fees to the banks indicated in Article The deadline for the deposits is the end of February of the following year. The contribution fees collected by the insurers must be paid by the end of the month following the date of collection; the insurance companies are obliged to provide the Account with a list of the contribution fees.

(2) The insurance companies failing to deposit the contribution fees to the account in a timely manner shall pay default interest on the outstanding amount.

(3) The provision of paragraph 2 shall be applicable to all parties delinquent in payments required within the scope of this regulation.

MANAGEMENT OF ACCOUNT ASSETS

Article 13. (1) The account assets shall be deposited to the account opened by banks included in General Communiqué no. dated of the Public Treasury and to be confirmed by the management committee or else shall be invested in government debt securities.

MAKING PAYMENTS

Article 14. (1) The agreed upon amount shall be paid to the beneficiaries after the necessary investigations have been made by the account, provided that there are no doubts about the claim amounts and/or beneficiaries.

Part Four. Application Requirements

Article 15. (1) With the approval of the undersecretariat, the management committee is authorized to request documents required for applications. The account's Web site will describe the required documents.

(2) Reasons for the partial or complete rejection of applications following the reviews and assessments made by the account shall be disclosed to the related parties in writing.

CHAPTER 5

Creation of a Common MTPL Database

Murat Dişçi

Uninsured driving is a major issue for almost any motor third-party liability (MTPL) system. In the United Kingdom, an estimated £15 of every premium goes to cover the expense of uninsured drivers. The insurance industry feels the financial impact of this in two ways:

- The loss of premium income that would otherwise have been received
- The cost to the industry (and ultimately the complying policyholder) that has to be financed by the country's insurance guarantee fund.

Insurance information centers and MTPL insurance database centers are frequently established to implement an industrywide database of information on motor insurance. They provide a central source of information for the police and others, assist in the fight against uninsured driving, and provide other benefits as well.

This chapter presents the steps involved in building such a database and describes the benefits of having a national, compulsory MTPL database

system. It presents the structure and processes of such a system and offers an example of the legal framework for such a database.

Background

Running a system of compulsory MTPL insurance requires a series of properly orchestrated participants, including insurance companies, policyholders, loss adjusters, insurance agents (if relevant), and the police. A central database that stores and provides access to the insurance information of policyholders, including claims, is critical to this coordinated effort.

Storing the historical insurance information of the individual policyholders and making it usable for diverse participants in the system are beneficial for the sake of both the process and supervision. Such a system is useful for the following:

- Identifying uninsured drivers
- Unifying MTPL insurance practices
- Preventing fraud.

Such a system is a public service that protects the rights of citizens. If it is seen as such, its presence will support the creation of a well-run, compulsory insurance sector.

Benefits of a Common MTPL Database

Storing all insurance information in one database and providing appropriate levels of access to the related parties create benefits across the community.

The key users of the system are the police, who need to know as quickly as possible who the relevant insurers are and whether the vehicles are insured. This information puts the police immediately on the track of criminal activities and can be used constructively in more general police matters. In the United Kingdom, for example, the police have powers to confiscate a vehicle that is on a public highway and found to be without insurance; if, after a

period of time, no evidence of insurance is produced, the vehicle concerned can be sold or crushed.

Individuals will benefit from a system that protects them from the risk of purchasing a fraudulent policy, allows them to query policies, ensures that they receive a suitable no-claim or other discount, if eligible, and enables them to receive payments quickly. In some countries, it may be difficult to protect the data from fraudulent use. It is essential for the system to respect privacy and only grant access to suitably authorized persons.

Insurance companies and agencies will benefit from the system as well. They will increase the volume of premiums as a result of the correct application of tariffs, gain additional income from premiums and commissions due to the prevention of fraud, and be protected from the issuance of policies outside the system. Both insurance companies and agencies (if relevant) will benefit from having access to the statistics created by the system.

Finally, the state will minimize tax losses due to unregistered transactions, be able to protect the consumer, and receive more tax revenue as insurance companies earn more income.

Purpose of a Common MTPL Database

The purpose of a common database for the insurance sector is to identify motor vehicles operating without valid insurance, to prevent insurance fraud, and to establish correct pricing, creating confidence in the sector. It is intended to support trustworthy, well-controlled insurance practices by helping to unify practices within the insurance industry and creating transparency regarding both administration and operations. By supporting standard practices using data in the same format for everyone in the market and ensuring a high level of transparency, such a database will help to keep companies and individuals from engaging in deleterious market practices.

In order to realize these goals, the state and the relevant private sector entities will have to facilitate daily updates and mutual use of data by the relevant parties. As a medium-term goal, all data collected could be associated with other sources of information used by government institutions such as the police force. The database should at least be capable of being cross-checked with other relevant databases, such as police records.

Typical Problems Addressed by Having a Common MTPL Database

MTPL insurance typically comprises a significant proportion of the insurance books of most countries, but due to lack of proper administration, and fair claims-handling practices in particular, citizens are generally dissatisfied with this class of coverage. MTPL insurance is easily and frequently misused by insurance companies; it tends to grow rapidly, is cash flow rich, and often is subject to weak supervision. Therefore, too many citizens can become victims of fraud and pyramid arrangements sustained for long periods by underpricing and under-reserving. Such inaccuracies give rise to unfair competition in the sector and may spread to other segments of the insurance sector. Incorrect applications in MTPL insurance weaken the public trust in the entire insurance system, including the regulatory authority.

Many developing and transition countries do not have a common and reliable database that stores all of the data for the MTPL insurance sector. As a result, some data inevitably are missing, and some are inaccurate. In practice, especially with regard to no-claim discounts and agency commissions (where either of these are relevant), some operations are not up to date, lacking the correct tariffs and instructions. In the absence of an information infrastructure to monitor such incorrect practices, even compulsory MTPL insurance can be weakened by the presence of a large number of unregistered policies and the inability to take action against them.

From a pricing point of view, the premium of a policy should be defined in a “standard tariff application” environment. In order to establish accurate pricing, correct policies should be issued, and claims information should be accumulated centrally.

Vehicles without insurance (that were never insured or whose insurance has lapsed) cannot be monitored except by cross-checking vehicle registration records with insurance records. In fast-developing markets, some insurance agencies submit data to companies only after months of delay. Others issue policies manually. Both cause serious problems with regard to monitoring the insured, collecting premiums, and submitting claims for damages.

Setting up a common MTPL insurance database is an effective method of overcoming or at least reducing these problems. In addition to avoiding fraud, such a database helps to prevent the issuance of unregistered policies.

By transmitting information to the central system in a timely fashion, accredited users will be able to query a policy, and the system will generate a claim status document.

Use of the System

Various parties may use the system, including the police, government agencies, insurance entities, and appropriately accredited citizens.

Government Agencies

Various government agencies will use the system, including the insurance supervising authority, the police, the guarantee fund, and the Ministry of Health. The insurance supervising authority will use the system to ensure that companies are not price dumping or creating a pyramid-style funding structure. Because the statistical information will be in a uniform format, actuaries will be able to undertake reliable studies of premiums and conduct other types of technical analysis, such as tariff modeling. In addition, the police will use the system to monitor uninsured vehicles by cross-checking vehicles on the road with vehicles appearing in the database as insured.

Many governments operate an insurance guarantee fund that pays claims when the liable insurer in an accident is not solvent or the driver (or vehicle, depending on the system) is not known or is uninsured, as in hit-and-run accidents. This is the subject of chapter 4. A common MTPL database will allow the guarantee fund to obtain information and cross-check the evidence gathered on the scene. In addition, the guarantee fund will use records stored in the database to determine the limits and terms of coverage, thereby increasing the penetration and volume of premiums by helping to reduce the incidence of uninsured driving. This will have a positive effect on the fees collected for the guarantee fund(s), which constitute a portion of all insurance premiums. The Ministry of Health can also use such a database to determine quickly who is liable for the costs of medical treatment administered immediately after an accident.

Insurance Companies and Agencies

To operate an effective centralized and transparent information system, each insurance company will have to maintain a minimum standard policy risk profile. This will help to prevent uninformed competition based on inadequate or manipulated risk data. It is a matter of choice in the design of the system whether an organization can see the risk profile of other organizations in the sector. In a market where premiums are flexible, the loss record of the client will be critical from an underwriting point of view. Clear observation of the loss record of insured individuals will help the underwriter to differentiate the premium charged a claim-free client from that charged a loss-making one. However, this consideration may not be relevant in many countries. Having an MTPL database that is accessible by every company in the insurance business thus will help to improve the amount and the quality of information available.

Insurance agents are not always involved in MPTL systems, but where they have a role to play, they also will benefit from having a common database. Standard information and a common understanding of a specific client profile will enable agents to apply the same underwriting standards to the same clients. Therefore, different agents use the same information to determine their underwriting procedures, premiums, coverage periods, loadings, and discounts. All the necessary information can be obtained from the system in seconds, which eliminates the need to key in the policy information again, reducing mistakes and streamlining the process.

The insurance authority will be able to use the system to monitor not only MTPL insurance but other obligatory insurance as well, enabling it to monitor both persons and vehicles. This will allow companies to offer no-claim deductions on multiple policies if the MTPL framework allows such an approach.

Finally, loss adjusters may use the database to gather information for managing claims.

Insured Individuals and Citizens

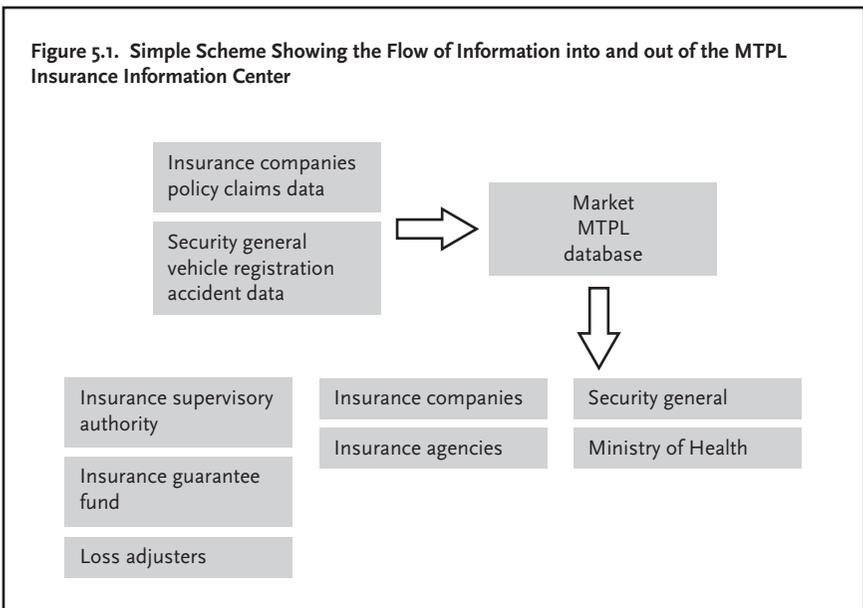
Individuals will benefit from the database because the existence of trustworthy historical data will increase their confidence in the insurance system

in general and the MTPL insurance sector in particular. A properly controlled insurance environment will eliminate the existence of duplicate policies, which reduces the volume of premiums. Individuals also will benefit when the number of uninsured drivers is reduced.

How the System Works

A central database is created to collect all of the policy information and claims payment records related to MTPL insurance. Insurance companies are required to collect the information and transfer it to the database, which is administered by an autonomous organization, such as a commercial information services company, which receives the data, integrates the information into the database, and then presents information generated for the benefit of the insurance sector as a whole (see figure 5.1).

Policies and claim records can be transferred on a daily basis. It is obviously important for the central database to be updated continuously and promptly. Users such as the police need to be able to rely on negative find-



ings as well as positive ones. For example, it helps the police at the scene of a serious injury accident to know immediately whether the vehicle is insured or uninsured and, if insured, who the relevant insurer is. However, if data are regularly delivered two or three months late, the police cannot determine whether a vehicle is uninsured or (perhaps more likely if there is extensive late reporting) whether the policy is valid but has not yet been recorded in the central database. A time limit or other strong monitoring procedures is essential: the annual report of the United Kingdom's MTPL database gives high profile to the quality and timeliness of data reporting, for good reason, because this is a core feature of a successful MTPL database.

Users within the network may search these records, depending on their level of authorization. And insurance companies use claim status documents to renew policies. All of the information stored is accessible by the relevant authorized parties.

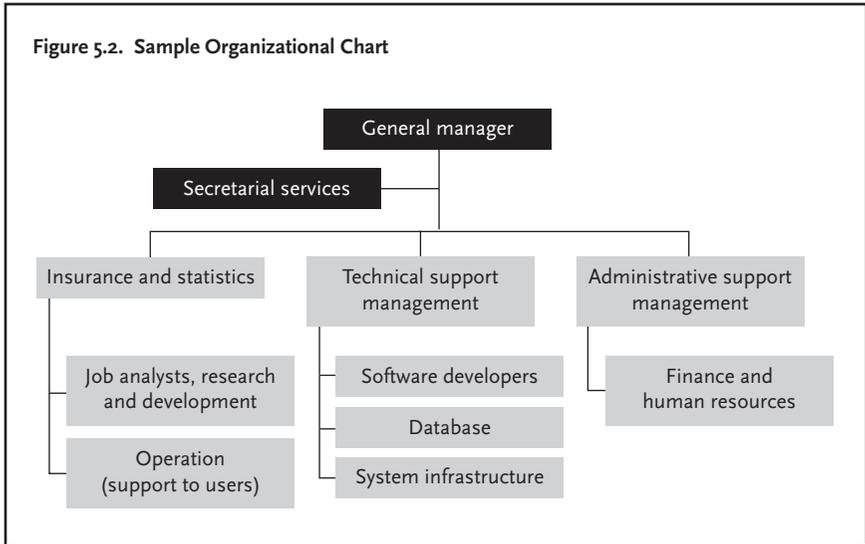
System Infrastructure

A legal framework is needed to clarify the duties, organizational structure, financial structure, and operational workflow of the center. The regulation also needs to specify the creation of a management board (an executive committee) to which the general manager reports. The appendix to this chapter contains a sample regulation pertaining to TRAMER, the Turkish insurance information center.

The MTPL information center should be an autonomous technical organization staffed by software and hardware specialists. A team of software developers should be in charge of developing new software, while a team of hardware specialists should be in charge of maintaining the physical infrastructure. Database administration, security of data, job analysis, and research and development are the major duties to be handled throughout the organization. Also needed are departments to handle financial affairs, human resources, or secretarial duties.

Figure 5.2 presents a typical organizational chart. The figure is based on TRAMER, and the structure can be amended to reflect the needs of a particular country and the responsibilities of a given organization.

Figure 5.2. Sample Organizational Chart



Example: The Turkish Experience

TRAMER, Turkey's MTPL insurance information center, was established by regulations published in the Official Gazette no. 25318, dated December 16, 2003. TRAMER's fundamental purpose is to provide efficient auditing in MTPL insurance, ensure uniformity of practices in the sector, prevent insurance fraud, increase society's confidence in the insurance sector, provide proper pricing, and prevent unfair competition.

The TRAMER service network consists of the following:

- Undersecretariat of the Turkish Treasury
- General Directorate of Insurance
- Turkish Insurance and Reinsurance Companies Association
- A guarantee fund
- Insurance companies
- Authorized agencies and brokers
- Experts
- General Directorate of Security

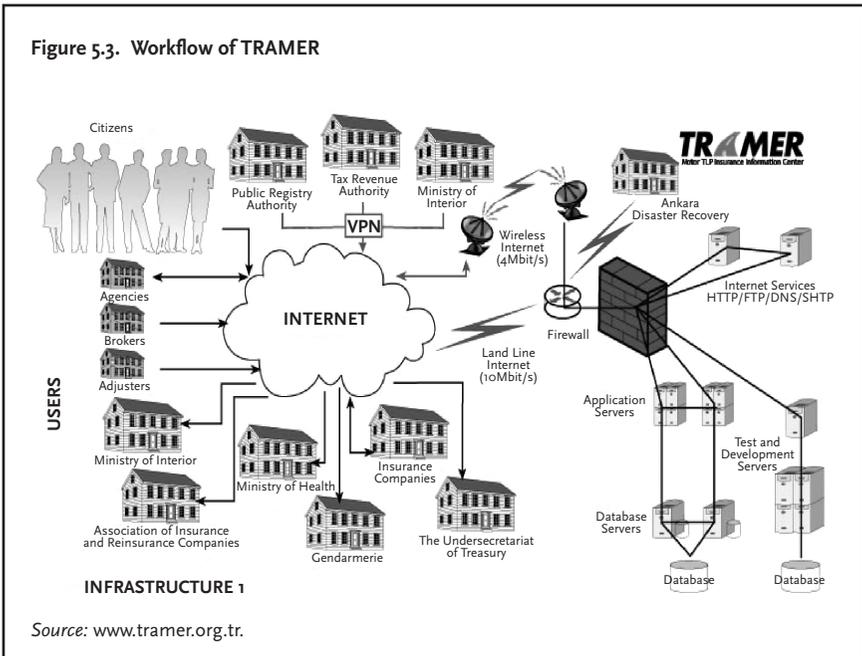
- Police department
- Ministry of Health
- Citizens.

Technical Infrastructure

Figure 5.3 shows the flow of work through TRAMER, showing all parties involved in the operation. All data are exchanged through the Internet.

TRAMER has set the following short-, medium-, and long-term objectives for its operations.

- *Short-term objectives* are (a) to establish a relational database that stores MTPL insurance policies of all insurance companies and is updated with a maximum delay of one day, (b) to collect the claims data of all insurance companies with regard to MTPL insurance, associate such records with insurance records, and issue claim status doc-

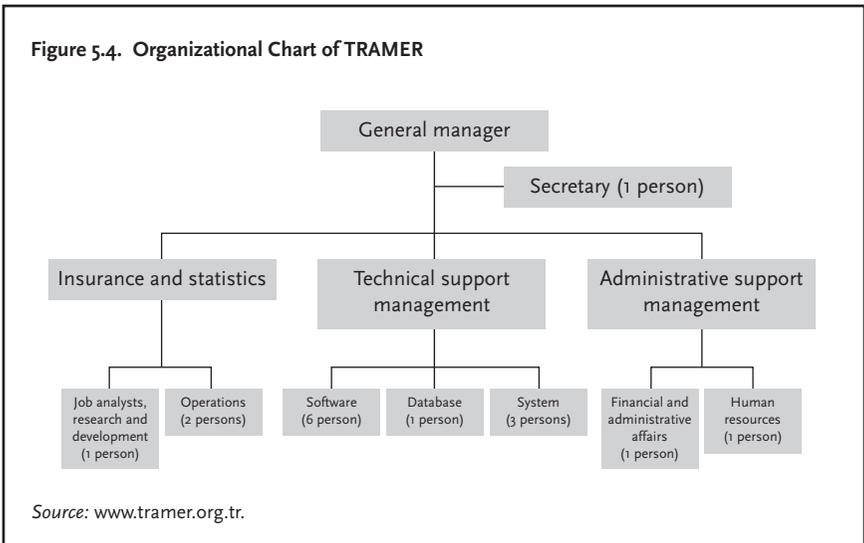


uments centrally, and (c) to convert the period of coverage, insurance rates, and claims data into administrative and informational reports in a certain format and announce them to the public.

- *Mid-term objectives* are (a) to import traffic registration records from the Directorate General of Security on a daily basis and (b) to associate such records with insurance records to monitor uninsured drivers as well as ease setoff transactions of insurance companies with regard to recourse subrogation.
- *The long-term objective* is to contribute to the development of the insurance industry using current and developing technologies.

Organization

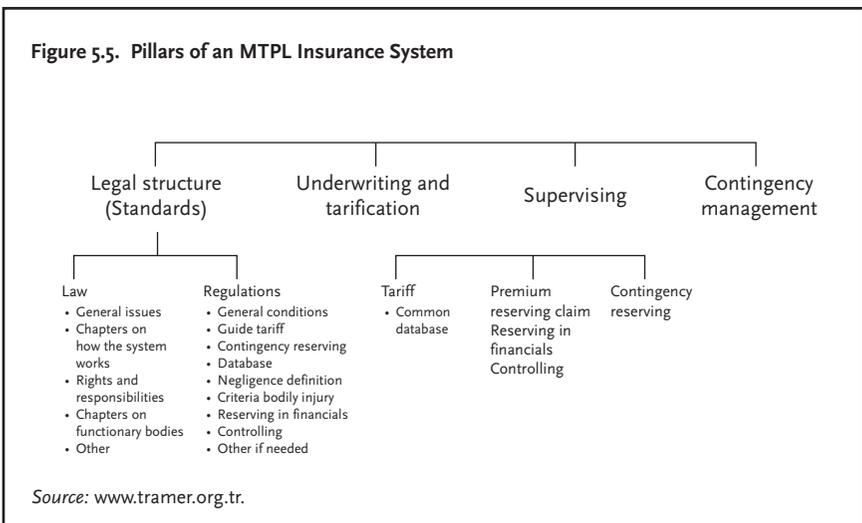
Figure 5.4 presents the organizational chart of TRAMER. According to the official regulation, TRAMER management reports to an executive committee having members from the undersecretaries of the Directorate General of Insurance, Ministry of the Interior, the General Directorate of Security, the Insurance Association, the board of directors of the Insurance Association, the technical managers of member insurance companies, and



the insurance information center manager. Internal staff perform more technical functions.

Conclusions

MTPL insurance is one of the most critical protections provided to citizens, as claims are becoming more frequent, larger, and more complex throughout the developing world. The increasing complexity is bringing new problems, including the need to deal with uninsured driving, carry out proper underwriting, differentiate premiums by risk profiles, track the claims of individuals, and prevent fraud. All of these require a technological tool with which to manage the process countrywide. Having an MTPL insurance information center and a national MTPL database supports the proper operation of all pillars of the insurance system, including legal structure, underwriting, determination of premiums, supervision, and contingency management (see figure 5.5). A guarantee fund helps to manage contingencies and, as such, supports the proper evaluation of cases. In essence, an MTPL insurance information center is one of the most value-adding investments that can be made in respect of a national MTPL insurance system.



Appendix. Exemplary Regulation: Motor Third-Party Liability Insurance Information Center Regulations

Purpose and Scope

Article 1. The purpose of these regulations is to organize the establishment and operation of a motor third-party liability insurance information center with regard to obligatory insurance for motor vehicle liability and detail the responsibilities of insurance companies.

Reference

Article 2. These regulations rely on Article 36 of the Insurance Auditing Act no. dated

Definitions

Article 3. Within these regulations,

- a. *Undersecretariat* shall mean the insurance supervisory authority
- b. *Association* shall mean the Association of Insurance and Reinsurance Companies of Turkey
- c. *Center* shall mean the motor third-party liability insurance information center
- d. *Committee of administration* shall mean the committee of the motor third-party liability insurance information center
- e. *Member insurance companies* shall mean the insurance companies holding a valid license to offer motor vehicle financial liability insurance
- f. *Authorized users* shall mean the users with various levels of access to information records of the center
- g. *MTPL insurance* shall mean motor vehicle financial liability insurance.

Motor Third-Party Liability Insurance Information Center

Article 4. The motor third-party liability insurance information center was established within the association in order to carry out the duties set forth in these regulations. All insurance companies holding a valid license in the branch of motor vehicle financial liability insurance are the natural members of the center. The center provides data with regard to this type of insurance on a central database, updates it daily, and gives various levels of access to concerned parties in order to provide uniformity in the practice of MTPL insurance, to prevent insurance fraud, to improve the confidence in the insurance system, to identify motor vehicle operators without valid insurance, to ensure proper pricing, and to perform similar objectives.

Duties of the Center

Article 5. The center performs the following duties:

- a. To establish a relational database for storing the records of insurance companies with regard to MTPL insurance contracts and to maintain an update process by the member insurance companies with a maximum delay of one day
- b. To collect outstanding and paid claims data about MTPL insurance and relate such insurance records with other insurance records
- c. To issue a claim status certificate, which serves as the basis for no-claim deductions and increased premiums and to grant these certificates on the request of a member insurance company, agency, or the insurer
- d. To cooperate with relevant entities for the determination of uninsured motor vehicle operators, to electronically import traffic registry records of motor vehicles if applicable, to relate such records with insurance records, and to maintain lists with regard to uninsured vehicles
- e. To meet the needs of authorized users, as much as practical

- f. To convert insurance data, insurance rates, accident and claim data, and similar statistics into information reports in the given format and present such reports to concerned parties
- g. To monitor practices of member insurance companies about MTPL insurance
- h. To ease the setoff processes of mutual collection rights of member insurance companies arising from MTPL insurance
- i. To perform studies about the tariff of MTPL insurance.

The center establishes a secure information system with a backup facility having the abovementioned abilities in order to perform the said duties and outsource such facilities when necessary.

Executive Committee of the MTPL Insurance Information Center

Article 6. The executive committee is composed of five members, one being the chairman, with the following makeup:

- a. A member from the undersecretariat of the Directorate General of Insurance (chairman)
- b. A member from the Ministry of Interior, General Directorate of Security
- c. A member representing the association
- d. A member designated by the board of directors of the association among the technical managers of member insurance companies
- e. Center manager.

In order for the members to perform their duties, each of them shall have the required knowledge and at least 15 years of experience in the scope of his or her duties and expertise in the field for which he or she is selected.

No attendance fee shall be paid to the members of the executive committee for their duties therein.

The executive committee will hold a meeting when necessary but not less than four times in a calendar year with the participation of not less than four

members. The meeting invitation is made by the request of the chairman or at least three members. Resolutions are made with the positive vote of not less than four members.

Duties of the Executive Committee

Article 7. The executive committee performs the following duties:

- a. To decide to purchase or outsource software, hardware, or otherwise for the formation and the needs of the informatics system
- b. To determine the scope, delivery periods, and formats of information requested from member insurance companies and other relevant entities
- c. To define authorized users and to determine the extent, the method, and the content that such users may access
- d. To determine the content and publishing of reports and statistics for the information of concerned parties and the public
- e. To take necessary measures for the security of data in the informatics system
- f. To inform the undersecretariat about the measures to be taken for the performance of its duties
- g. To inform the undersecretariat about the deficiencies about the practice of MTPL insurance
- h. To inform the undersecretariat about MTPL insurance tariffs
- i. To make legal steps for member insurance companies concerning unpaid fees
- j. To assign the center manager and other personnel and to determine personnel rights and fees
- k. To determine methods to be used and the persons authorized to use them on behalf of the center
- l. To ensure that operations can be monitored by the undersecretariat.

Center Manager and Other Personnel

Article 8. The center manager shall be elected by the executive committee among three candidates nominated by the association. The manager is responsible for the proper handling of central accounts and records and the correct implementation of the center's operations in compliance with these regulations and executive committee resolutions.

In order to implement the duties of the center, a sufficient number and quality of personnel shall be employed by the executive committee.

Member's Liability for the Supply of Information

Article 9. Member insurance companies are responsible for submitting information to the center correctly and completely and in the defined form and time requested by the center. Member insurance companies shall provide the center the records about MTPL insurance issued as from and information regarding claims occurred as from such date in the defined data scheme and submit that information to the center on the next day at the latest.

Relevant measures shall be taken by the undersecretariat for member insurance companies that do not comply with the above liability.

Financial Contribution Share

Article 10. All costs of the center for the performance of the duties including the informatics systems and personnel shall jointly be covered by member insurance companies on the rates determined by the executive committee in consideration of their annual generation of premiums in the field of MTPL insurance. Contribution of an on-road MTPL insurance assurance account may be used if the undersecretariat agrees.

Member insurance companies are obliged to pay the contribution fees that are requested from them with written request before the defined due dates.

Access to Information Records

Article 11. The information system of the center must distinguish users with regard to their level of access to information and provide the required security measures. The insured individuals can access their records through the Internet and use the database to check summary insurance and claim records of the motor vehicles they operate.

The users that may access detailed information with regard to their exclusive operations are the undersecretariat, general directorate of security, the association, on-road MTPL insurance assurance account, member insurance companies, agencies, and insurance experts. The contents of the records that can be accessed by authorized users and their methods of access shall be defined by the executive committee and notified to concerned parties.

The access to and use of information records by authorized users that do not comply with the rules defined by the executive committee shall be restricted. In case such condition is not met, the access to and use of information records by such persons shall be denied.

Audit

Article 12. The activities of the center shall be audited by the undersecretariat.

Validity

Article 13. These regulations are in force as from the date they are published.

Implementation

Article 14. These regulations are implemented by the minister to which the Undersecretariat of Treasury is committed.

CHAPTER 6

Involving the Police

Murat Dişçi

Determining the degree of responsibility for each party involved in an accident is vital to determining which party's insurance policy will cover what part of the damage. This effort will determine the extent of the insured parties' liability, and the MTPL policy will be applicable on a proportional basis.

There are several approaches to determining the responsibility of parties to an accident. This chapter discusses the most common approach, which includes the use of police and expert witnesses to determine causation or negligence according to legal definitions. The chapter also discusses a streamlined process, adopted with some success in Turkey, in which the parties prepare a report without consulting the police. As traffic becomes more dense and the number of accidents increases, the police authorities are being called on to spend a growing amount of time and resources testifying as expert witnesses. Having the individuals involved in certain types of simple accidents sign and issue a report without consulting the police department is considered best practice in many mature MTPL markets. This chapter assesses the technological infrastructure needed to support the issuance of such reports.

Determining Negligence in Accidents Subject to MTPL

Accurately determining responsibility is an important factor affecting the claims of insurance companies and indirectly the premiums paid by customers. In order to avoid any ambiguity, the determination must be, and be perceived to be, fair and in accordance with the law.

Responsibilities of the General Public with Respect to Traffic Accidents

Fundamentally, one would hope that drivers passing by an accident site or drivers of the vehicles involved in an accident would be legally obliged to administer first aid on the scene, to inform the closest police station or health care institution about the accident, and to take injured people to the closest health care institution. When the accident takes place on a highway, it would surely be advantageous if witnesses were legally obliged to carry the dead and injured off the highway and attend to them. Furthermore, it would help if the owners or managers of gas stations on expressways were obliged to make available at all times first aid conforming to the established standards, and it would be sensible if this obligation were legally ensured. These are considered civic duties in many places.

Procedure for Determining Negligence and Issuing a Report

In Turkey, an accident is handled simultaneously both by the general civil police and by the traffic police. If the civil police are not available, the traffic police will issue the necessary records and forward a copy to the police forces that were not on the scene. Many countries do not distinguish between traffic police and general civil police.

If the parties involved come to an agreement, if no other crime is involved, and if the accident only results in property damage (not bodily injury), legal proceedings need not be compulsory. This circumstance has been addressed in the legislation in Turkey, and any jurisdiction wishing to adopt the proce-

dure would likewise have to issue appropriate legislation. Having such a procedure avoids the need to go to court for each and every incident.

In case of a traffic accident, it helps if the police are authorized to close the street to vehicle traffic for the purpose of collecting evidence and to open the road for traffic once the investigations have been completed and the injured people as well as any damaged vehicles have been removed from the location.

Police should ideally be able to act as legal experts in case of a traffic accident. Legislation is usually needed to establish the rights and duties of the accident investigation officers, legal experts, and police officers who are going to perform these duties.

Confirmation of Responsibility

The basis for assigning responsibility for an accident should be clearly defined. The degree of responsibility can be determined fairly by means of a fixed ratio established by legislation or a variable ratio established by the police handling the incident. This determination may be communicated by the police to insurance companies on the basis of certain references and standards.

The following behaviors are generally considered to constitute negligence in a traffic accident:

- Crossing against a red light or failing to heed a stop sign
- Entering a road closed to traffic
- Driving against traffic
- Rear-ending another vehicle
- Passing in a no-passing zone
- Emerging from a subsidiary road without due care and attention
- Hitting a parked car.

However, if any of these actions can be attributed to more than one driver involved in an accident or if the accident is a result of failing to observe any other rule, prohibition, restriction, or instruction, responsibility will be assigned to the parties according to the principles mentioned in the legislation.

In some cases, responsibility cannot be determined on the spot, such as when the accident involves circumstances not covered in the definition of negligence or when more than one party is negligent. When more than one party is negligent, the common practice is to assign responsibility equally between the parties. However, if the legislation is clear and explicit, the police on the scene should be able to determine responsibility.

Good practice is to have a central authority evaluate the report issued and signed by the police or by parties involved in the accident stating the cause of the accident and presenting diagrams of the scene. This helps to eliminate confusion and shortens the process of paying claims. Filing reports electronically in a central system—the subject of chapter 5—gives insurance companies the information they need to agree on the degree of responsibility. Even in cases where they cannot agree, the information in the central system will provide valuable input for any higher-level authority that is assigned the task of allocating responsibility between the parties.

Accidents Causing Property Damage

This section discusses a method of determining responsibility that involves accident reports issued by the parties involved in an accident when specific circumstances are excluded and negligence is determined by a central organization rather than by officers on the scene.

The period for determining responsibility and confirming damage should be as short as practical, and an accident report should be submitted to the insurer as soon as possible. Issuance of such a report is more timely when the report is issued by mutual agreement of the parties and does not involve the police. This method is becoming more common in Turkey.

This method does not ensure that parties come to an agreement regarding their negligence, and it does not mean that the traffic police will not be consulted at all. The traffic police are obliged to handle the incident and issue a report in the following circumstances:

- If the driver does not have a valid driver's license
- If the driver is underage
- If the driver is drunk or suspected of being mentally impaired

- If one or more of the vehicles involved in the accident belongs to a government agency
- If goods owned by a public agency are damaged
- If only third-party goods are damaged
- If one or more vehicles involved in the accident does not have insurance
- If the traffic accident involves death or injury.

If none of these circumstances applies, the drivers involved in the accident can sign an accident report that follows a given format. If possible, photographs should be taken from different angles before the vehicle is removed from the scene of the accident. More than one form can be used for traffic accidents if more than two vehicles are involved. In that case, each form must be signed by all drivers.

Each party submits a copy of the report and photographs of the accident to the company insuring his or her vehicle. The insurance company inputs the information received in the general insurance database together with the proposed distribution of responsibility. It then informs the other company or companies involved. The other company either approves the proportion of responsibility suggested by the first company or submits its own suggestion. If the companies cannot come to an agreement about negligence or causation, a higher authority must determine responsibility. Figure 6.1 presents the flow chart for an accident report. Figure 6.2 presents the form used in Turkey.

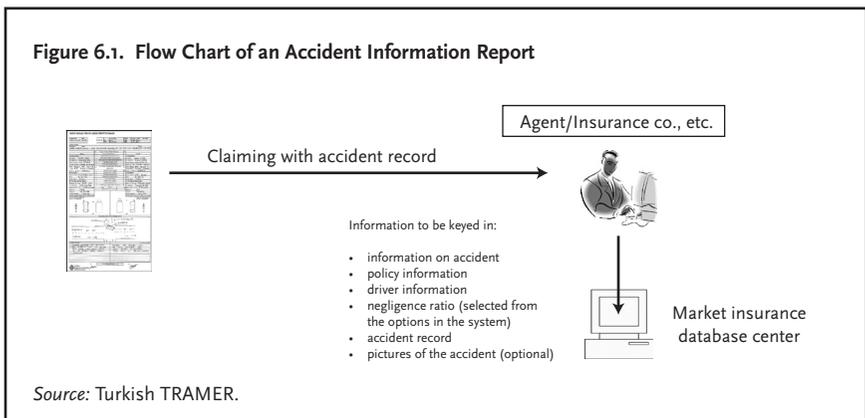


Figure 6.2. Sample Traffic Accident Record

Traffic Accident Record					
1. Date of Accident		2. Place		City: _____ Street: _____ District: _____ Avenue: _____	
3. Witnesses					
Name Surname		Address		Tel No: _____	
A 8- Put (x) for the proper cause of the accident B					
Vehicle A		Opposite direction		Vehicle B	
4. Driver Info		Opposite direction		4. Driver Info	
Name Surname: _____		shifting to a crossed traffic road on/into a traffic lane, highway		Name Surname: _____	
Identify No: _____		shifting to the traffic lane used by the opposite direction		Identify No: _____	
Driving license no: _____		Rear ended crash		Driving license no: _____	
Place (City/District): _____		etc.		Place (City/District): _____	
Address: _____		etc.		Address: _____	
Tel No: _____				Tel No: _____	
5. Vehicle Info				5. Vehicle Info	
Make & Model: _____				Make & Model: _____	
Number Plate: _____				Number Plate: _____	
Type of Damage: _____				Type of Damage: _____	
5- Traffic Signetaxi Police Bilgiyeti				5- Traffic Signetaxi Police Bilgiyeti	
Name of the assured: _____				Name of the assured: _____	
Identity no: _____				Identity no: _____	
Name of insurer: _____				Name of insurer: _____	
Agent No: _____				Agent No: _____	
Policy No: _____		km Speed		Policy No: _____	
Transter certificate No: _____				Transter certificate No: _____	
Inception date/ending date of policy		m Length of break		Inception date/ending date of policy	
7. Show the crashed part of the vehicle with arrow ()				7. Show the crashed part of the vehicle with arrow ()	
front		front		front	
rear		rear		rear	
9- Draw the simple appearance of the event					
10- Driver Comment			10- Driver Comment		
A		11 Driver Signatures 11		B	

Note: The form is filled out as follows: (a) Information about the date and location of the accident is written on parts 1 and 2. (b) Contact information for the eyewitness(es), if any, is written on part 3. (c) Information about the driver, vehicle, and MTPL policy is written on parts 4, 5, and 6. (d) The appropriate box is marked on part 7. It is not obligatory to fill in this section, but it helps to ensure that the company can assess information about the incident as soon as possible. (e) Part 8 is filled in for vehicles having a green card (which is issued for vehicles arriving from foreign countries); the green card replaces vehicle insurance. (f) The side of the vehicle that was damaged first is marked, along with the type of vehicle, in part 9. (g) A drawing of the crash area is written on part 10. Avenue and street names should be indicated on the draft, the vehicle's direction of movement must be marked, and road lines must be drawn. Vehicles should be marked as A and B vehicles. (h) The drivers state their opinions about the accident on part 11. In case part 10 is not enough for the driver's opinions, opinions can be written on a separate piece of white paper. (i) Part 12 is signed by the drivers after part 11 is filled in as described. Unsigned records are not valid.

Fraud

A major problem in many developed countries is the abuse of the MTPL system for fraudulent purposes. In some countries, quite sophisticated schemes have been created for the express purpose of “milking” the MTPL insurance system: the greater the award levels, the greater the incentive to engage in fraud. Chains of claimants—where, for example, Mr. Smith hits Mrs. Jones in one accident and a few days later Mr. Jones hits Mrs. Smith in another—have been all too common instances of fraud. In Australia, this type of problem has been the source of cash flow for major racketeering organizations.

Fortunately, this issue is not simply a one-way tale of woe. In Ireland, the prevalence of fictitious or otherwise exaggerated claims gave rise to two interesting consequences. One was the introduction of legislation to make (a) any attempt to file a known exaggerated claim a criminal offense and (b) the exaggeration of any part of the claim enough to invalidate the entirety of the claim (regardless of merit of the remainder of the claim). The second consequence was a general recognition that, in the end, making frivolous or unjustified claims raises the cost of premiums for everyone. It no longer was “smart” or fashionable to spin a successful fraud on an insurance company; on the contrary, social attitudes shifted to the extent that such claims met with disapproval, at least in some parts of the community.

Fraud is one of the big challenges of the era, for communities and nations of all shapes and sizes. MTPL insurance is particularly susceptible to fraud, with certain types of injury (notably whiplash) being very hard to disprove. In this context, legislation in New South Wales was enacted to enshrine a deductible to apply to personal injury awards, aiming to write out of the compensation process certain types of minor fraud. A key challenge for all involved with designing MTPL systems throughout the world is to address the issue of fraud.

Conclusions

Determining proportional responsibility of the parties involved in an accident subject to MTPL insurance is particularly important for ensuring fair treatment and determining the costs of insurance to the insurance companies.

The assignment of responsibility is one of the most important guiding elements of MTPL insurance, and accurate, timely determination is critically important. The most common method of determining negligence is to get support from traffic police in the field. This is a frequent method of determining negligence in emerging markets; however, the objective should be to determine causation centrally and not leave it to the discretion of police on the scene.

Given the increase in the number of vehicles on the road, finding ways to determine negligence without involving government offices is becoming increasingly popular. One of the most common methods is to initiate the claims process by means of a record issued by mutual agreement of the parties involved; the insurance companies involved then use this report as the basis for agreeing on proportional negligence.

Appendix. Sample Legislation (Circular Letter Turkish Experience)

This appendix presents the circular letter on accident reports to be issued by the parties for traffic accidents that result only in property damage. According to the Highway Traffic Law applicable in Turkey, the traffic report will be issued according to the following principles:

1. If the parties involved in a traffic accident that caused only property damage agree to determine the cause of the accident by means of a report to be issued by themselves, the “Report for Traffic Accidents Involving Material Damage” (the report) attached to this circular letter shall be filled in according to the attached explanations.
2. Records not signed by all parties involved in the accident shall not be considered as valid.
3. More than one form can be used in case of traffic accidents involving more than two motorized vehicles or in case it is required. The reports issued can be photocopied.
4. The report forms shall be duplicable and a minimum of two copies will be made. The forms shall be printed by the Association of the Insurance and Reinsurance Companies of Turkey according to the request forwarded by the insurance companies holding licenses to insure land vehicles. Printing

expenses shall be covered by the requesting companies according to the quantity requested.

5. The record issued shall be considered as equivalent to a traffic accident report issued by the traffic police.

6. If possible, photographs of the vehicles shall be taken before removing the vehicles from the accident location, and these photographs shall be taken into consideration with the report.

7. Claimants shall apply to the insurance company that issued the MTPL (traffic insurance) policy or the company that issued the “casco” motor insurance policy (insurance on your own vehicle), and the claimants shall submit the report filled in as mentioned above as well as the photographs, if any.

8. The insurance company consulted shall electronically forward the report and the photographs, if any, to the MTPL insurance information center (TRAMER) before the end of following workday at the latest.

9. TRAMER shall electronically forward the report and the photographs, if any, to the MTPL insurance companies and the casco insurance companies that insured the vehicles involved before the end of following workday at the latest.

10. The insurance companies shall make liability assessments within three working days once the report and photographs, if any, are sent out by TRAMER according to ratios of 0 percent, 50 percent, and 100 percent within the framework of this report by taking into consideration accident drawings attached to this circular letter. The result of its own liability assessment shall be communicated to TRAMER electronically. The infrastructure necessary for enabling real-time access to assessment results for insurance companies shall be provided by TRAMER.

11. The mutual agreement of insurance companies conforming to the aforementioned provisions shall be binding for other companies that have not duly forwarded their assessment. If one of the involved companies forwards its liability assessment to TRAMER according to the aforementioned provisions but other companies have not performed this duty, the liability proportions established by the company forwarding the assessment shall be taken as the basis.

12. If TRAMER confirms that agreement is achieved on the basis of assessments forwarded, the liability ratios established shall be communicated to the related insurance companies.

13. In case it is confirmed that the insurance company assessments have led to different outcomes within three workdays after TRAMER distributed the report according to Article 9, TRAMER shall submit the report and, if any, photographs to a Report Assessment Commission. (Such commissions are to be formed within the structure of TRAMER according to Article 17 of this circular letter.) The commission shall examine the report and photographs, if any, and shall establish definite liability rates on the basis of 0 percent, 50 percent, and 100 percent. The outcome shall be communicated to the companies electronically by TRAMER.

14. Each insurance company involved in the case shall pay the claims within eight days following the date of learning its liability proportion within the scope of abovementioned articles and completing the necessary documents. (In this way, prompt payment to the claimant is ensured. However, the rules do permit the insurance company to recover any excess payment it might have made should information later come to light that alters the terms of the initial assessment of the claim and assignment of responsibility.)

15. TRAMER shall provide the infrastructure enabling the claimants to learn online the stage of applications filed for investigation.

16. The traffic accident report must be issued by the traffic police

- a. If the driver does not have a valid driver's license
- b. If the driver is underage
- c. If the driver is drunk or suspected of being mentally impaired
- d. If one or more vehicles involved in the accident belongs to a public agency
- e. If goods owned by a public agency are damaged
- f. If only third-party goods are damaged in the accident
- g. If one or more vehicles involved in the accident does not have vehicle insurance
- h. If the accident involves death or physical injuries.

17. A sufficient number of regional commissions shall be established within the structure of TRAMER according to the board resolution of the Association of the Insurance and Reinsurance Companies of Turkey (the association) for the purpose of assessing responsibility for traffic accidents subject to this circular letter. Every commission shall have three members;

one of them shall be the chairman. The chairman and members of commissions shall be assigned by the association's board of directors responsible for the region where the commission shall be authorized. Wages and other financial rights of the commission members shall be covered by TRAMER. The commission shall resolve a decision by majority. Commission members shall not abstain from a vote. In case there is a tie, the commission chairman shall cast the deciding vote. The commission is obliged to conclude the assignments received within a maximum of three working days.

18. The report, notes on filling in the report, and sample reports are delivered to the policyholders free of charge.

19. Reports and filled-in sample reports are published on the association's and TRAMER's Web sites.

20. Infrastructure required under this circular letter shall be prepared by the related institutions in a manner to ensure that the system comes into force on the date of 01.04.2008.

21. This circular shall come into force on the date of

CHAPTER 7

Reinsurance

David Allen

Risk transfer is a mechanism that allows an insurer to protect its capital and stabilize its results from underwriting risk. From a motor insurance perspective, this capital is exposed to the risk of an adverse frequency or severity of claims in any one period. The compulsory nature of motor third-party liability (MTPL) insurance provides for a minimum statutory limit, which should, in most countries, be sufficient to indemnify the insured against loss.

Theoretically, MTPL insurers should have a statistically significant data set of common policy limits. As a result, they should be able to ascertain relatively easily the extent to which they need, if any, to protect against an adverse frequency or severity of loss in respect of their domestic exposures arising out of MTPL insurance.

The following issues are critical in determining the appropriate reinsurance structure for an insurer's MTPL portfolio:

- The relationship of premium volumes accepted to the insurer's own retained capital and surplus
- The policy limits in force for the MTPL portfolio.

The first of these points, ultimately aimed at the insurer's solvency ratio, is almost always addressed with quota share reinsurance. This is discussed below.

The issue of policy limits is complex. The insurer will obviously have to provide coverage for the minimum legal limits required in the insurer's own country. Less obviously, the insurer almost always will have to provide cover up to the standard minimum legal requirement in many nearby countries. Cross-border driving is an escalating issue for both private cars and commercial vehicles. Commercial haulage routes can spread the length and breadth of a continent. Customers increasingly need an insurer to provide cover for every country in which driving may be needed. In some countries, cross-border coverage is not a prerequisite, but in many it is.

Legal and Cross-Border Requirements in Europe

The fifth motor insurance directive (2005/14/EC) of the European Union (EU) requires member states to put in place the following minimum statutory limits, which must be index linked:

- €1 million per victim or €5 million per event, regardless of the number of claimants, in respect of bodily injury to third parties
- €1 million per event, regardless of the number of claimants, in respect of property damage to third parties.

Given that these figures represent a significant increase from the existing minimum statutory limits in some cases, the EU directive made provision for a transition period. Member countries implementing the fifth directive have until June 2012 to implement the full limits detailed above, with the proviso that they must introduce minimum statutory limits equivalent to 50 percent of the amounts provided for in the fifth directive by December 2009.

Implementation of the fifth directive will ultimately result in an increase in per person and per event third-party liability exposures in many European countries. While it could be argued that the underlying legal, and therefore the compensation, framework is largely unchanged in respect of domestic accidents involving motor vehicles, the exposure nevertheless exists, and

MTPL insurers will find themselves exposed to potentially severe losses significantly in excess of that which they could have reasonably expected under the previous legal regime.

The fifth directive does not attempt to harmonize motor insurance regulation across member states; it merely prescribes a minimum statutory limit for MTPL insurance. Accordingly, this minimum falls below the statutory limits in many member states. This is important because, according to the third directive (90/232/EEC), MTPL insurance automatically provides cover for civil liability exposures throughout the European Union, regardless of where the vehicle is registered. Prior to implementation of the third directive, this exposure was covered under a separate and distinct policy extension, known as green card insurance.

As with green card insurance, the level of indemnity is in accordance with the liability and compensation regime of the country in which the accident takes place. However, whereas previously a separate and distinct premium could be charged commensurate with the perceived level of exposure under the MTPL policy, the third directive states that MTPL insurance in one member state *automatically* provides coverage in any other member state; this increased exposure is borne by the insurer for no distinct additional premium.

In addition to the potential for increased severity of loss resulting from driving abroad, there is also the potential for a higher frequency of loss. An insured driver driving in a member state with which he or she is not familiar is exposed to different laws, speed limits, driving culture, roads, and motorways, contributing to a greater hazard for the compulsory MTPL insurer. Furthermore, because these minimum statutory limits vary from member state to member state, the insurer has no knowledge of the true level of exposure under the motor insurance policy. In addition, the MTPL insurer has no knowledge of the extent to which or for how long the higher limit will be required during any one period of insurance.

In summary, implementation of the third and fifth EU directives exposes European MTPL insurers to both a potential frequency and severity of loss significantly in excess of what they could reasonably have expected prior to the directive's implementation. As with other classes of insurance business, and in the absence of a significant injection of capital, MTPL insurers turn primarily to reinsurance as a means to transfer this risk.

Legal and Cross-Border Requirements outside Europe

The success of the European green card system has led to the development of comparable schemes elsewhere around the world. A driver buying a Lebanese-based motor insurance policy, for example, can enjoy full “orange card” benefits, enabling him or her to drive with MTPL coverage in Algeria, Bahrain, Arab Republic of Egypt, Iraq, Jordan, Kuwait, Libya, Morocco, Qatar, the Syrian Arab Republic, Tunisia, and United Arab Emirates. Wherever this type of arrangement is needed, the motor insurer needs to arrange local claims-handling capacity across a wide range of jurisdictions and to have the underwriting capacity to absorb the liability exposure to the full legal requirements for motor coverage in the country concerned.

It is not necessary here to describe the minimum legal requirements in every country, but the principle is clear: in most countries, an MTPL insurer needs to be able to absorb risk in many jurisdictions, possibly for limits much larger than the local ones.

Risk Transfer Solutions

Reinsurance is the main and preferred risk transfer mechanism for insurers. The perceived benefits of reinsurance can be categorized into four subheadings, known as the four Cs:

- *Capital*. To align the volumes of insurance accepted with the scale of the insurer’s capital in order to achieve an acceptable level of solvency ratio
- *Capacity*. To allow the insurer to assume greater original risk limits than its capital would otherwise support
- *Catastrophe*. To protect against an adverse loss event, or series of events, of significant magnitude
- *Creativity*. By sharing or spreading the risk, to provide risk transfer solutions of mutual benefit, allowing the insurer to participate in a new risk class or, alternatively, in an existing risk class exhibiting new or previously unconsidered characteristics.

The cover can be arranged on either an underwriting-year basis, more commonly referred to as “risks attaching,” or on an occurrence-year basis, more commonly referred to as “losses occurring during.” A risks-attaching treaty provides coverage for all risks that attach during the period of the reinsurance agreement, whereas a losses-occurring-during treaty provides coverage for all losses that occur during the period of the reinsurance agreement.

Reinsurance can be bought for individual risks (facultative) or for a portfolio of risks (treaty). Given the compulsory nature of MTPL insurance and the adequacy of the minimum statutory limits, facultative reinsurance is rarely used unless the original insurer chooses or is required to offer limits significantly in excess of the original minimum statutory limits. Given that this scenario rarely arises, this section details the main types of treaty reinsurance.

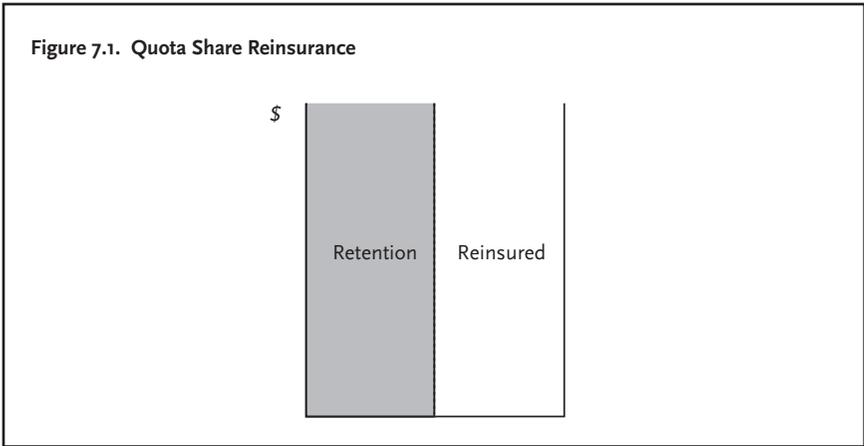
Proportional Treaty Reinsurance

As the name suggests, proportional treaty reinsurance transfers risk by sharing, in proportion, the original limits insured. The two most common forms of proportional treaty reinsurance are quota share and surplus reinsurance.

Quota share reinsurance is the sharing, in direct proportion, of each and every original risk within a portfolio. The insurer agrees to cede, and the reinsurer agrees to accept, a predefined proportion or percentage of each original risk assumed by the insurer. In consideration, the reinsurer receives a comparable proportion of the premium income charged by the insurer for assuming the original risk (see figure 7.1).

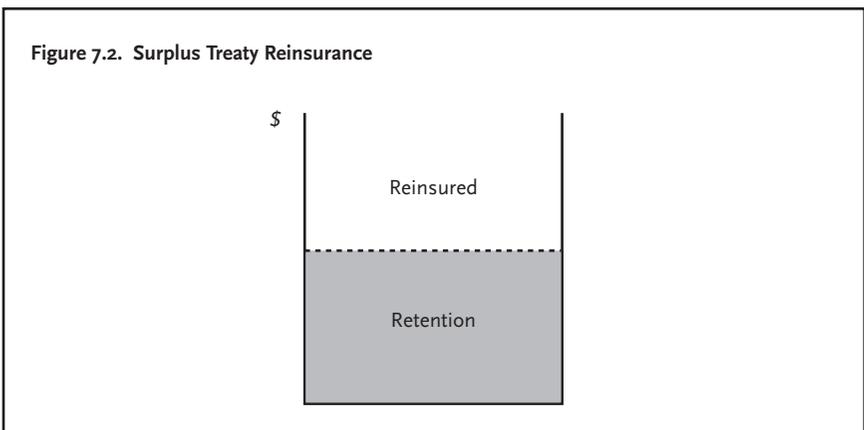
Quota share reinsurance is almost invariably subject to the same terms and conditions as the original insurance policy and almost always provides for a contribution from reinsurers to the original acquisition costs in the form of a commission. In return for providing the reinsurer with access to a risk class, an additional or overriding commission, payable to the insurer, is also commonplace in many classes, albeit this is less common in MTPL.

The principal purpose of an MTPL quota share is to relieve pressure on the insurer’s balance sheet. This pressure may arise in two key ways:



- The capital is insufficient to support the total gross premium volume accepted without reducing the solvency ratio to unacceptably low levels
- The board or shareholders determine that MTPL as a class presents too heavy a proportion of the company's overall risk profile.

In either of these cases, an MTPL quota share will cut back on the retained MTPL risk, and this will have the effect of improving the solvency margin and reducing the proportion of retained motor income relative to the other classes.

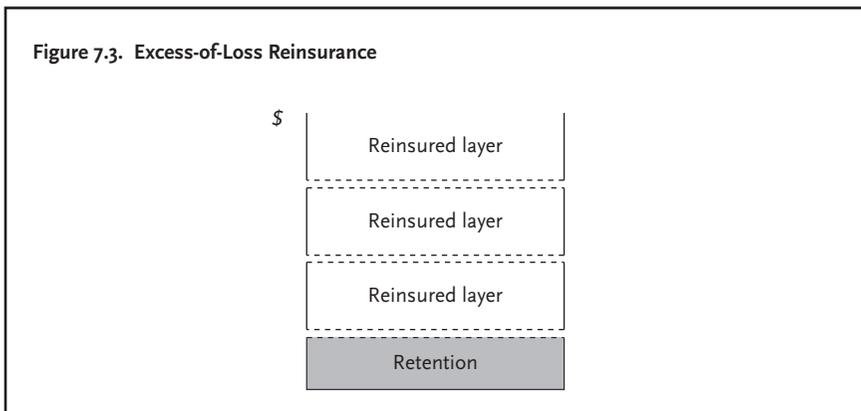


Surplus reinsurance effectively involves the ceding of exposure above a predetermined monetary level on each risk accepted. The insurer retains all amounts up to the predetermined monetary level and cedes the surplus amounts to reinsurers (see figure 7.2). The percentage of original risk and premium assumed by reinsurers will be determined by the relationship between the retention and the original sum insured. Surplus designs are extremely rare in MTPL reinsurance.

Nonproportional Treaty Reinsurance

More usually referred to as *excess-of-loss reinsurance*, this reinsurance transfers exposure(s) in excess of a predetermined monetary amount per event—that is, the retention. The insurer retains all claim amounts up to and including the value of the retention. In return for a premium, the excess-of-loss reinsurer pays the balance of any claim (or claims) in excess of the retention (see figure 7.3). It is usual to expect reinsurers to provide cover up to the maximum original policy limit provided, even when that “limit” is unlimited.

Often structured into a number of layers called a program, the cover traditionally responds on the basis of “any one loss or series of losses arising out of one event” and can be purchased on either a risks-attaching or a losses-occurring-during basis. In addition, the excess-of-loss program can pro-



vide for either a limited or an unlimited amount of aggregate cover under each layer. The main benefit of excess-of-loss reinsurance is that it limits the insurer's exposure to a fixed and known monetary amount from any one claim event.

Other Solutions

The other most common vehicle for transferring risk is risk pooling, either voluntary or obligatory, where the liabilities for a specific type or class of risk are pooled and all claims resulting from these liabilities are shared among members of the pool in an agreed proportion.

Obligatory pools are normally operated by government departments along the same lines as uninsured or untraced driver agreements and are funded by a levy on original premiums. Membership is compulsory for those insurers exposed to the risk in question, and the levy is determined annually.

Voluntary pools are usually organized in the form of a cooperative or mutual society and are run by, and purely for the benefit of, their members—that is, participating insurers.

Practical Limitations of Risk Transfer Solutions

Each type of risk transfer has distinct practical limitations. This section deals with each in turn.

Quota Share Reinsurance

Quota share reinsurance transfers risk by ceding to reinsurers a predetermined proportion or percentage of the exposure under each original policy. With regard to the increased domestic exposures affecting some European countries, this may be the ideal solution for some insurers. The insurer can retain a fixed percentage of each original policy, thereby restricting the potential severity of loss from any one event to which it is exposed. As confidence in and experience with the practical application of the new minimum statu-

tory limits increases over time, the insurer can, subject to any other capital constraints, reduce the amount ceded to reinsurers.

However, while solving one issue by reducing the exposure under any one policy, quota share reinsurance does present another. With reference to the potential international exposure, while the percentage of each original policy retained by the insurer is fixed, the limit of the original insurance policy is not fixed in some countries.

As a result, the actual monetary amount ceded and retained by the insurer is governed not by the quota share agreement, but by the limit of the original policy, which can vary significantly from country to country. For example, retaining 50 percent of an original policy exposed in Norway still results in the insurer retaining theoretically unlimited exposure in respect of bodily injury. The insurer is not likely to find this solution acceptable in isolation, given that one loss has the potential to erode any expected profit for many years. Most regulators consider an excess-of-loss solution to be obligatory in these circumstances.

Surplus Reinsurance

Surplus treaty reinsurance involves ceding the surplus of a predefined monetary amount on each risk. The key difference between a surplus and a quota share is that surplus reinsurance allows an insurer to insure differing original sums and retain, after the surplus reinsurance agreement, a fixed monetary amount of exposure per risk.

As discussed, where the primary policy provides unlimited domestic cover, or where it provides cross-border coverage in a country where unlimited coverage is required, a surplus solution is not a practical answer. As a consequence, this design is unknown in European MTPL. However, it may be a helpful solution in a context where primary coverage is only required for modest limits and where the insurer seeks only to cede away a portion of the larger sums insured.

Excess-of-Loss Reinsurance

With the expected severity of loss increasing as a result of an increase in domestic and international limits afforded, nonproportional reinsurance allows the insurer to mitigate or reduce its exposure to any one claim event.

However, following a change in the statutory minimum insurance requirements, neither the insurer nor the reinsurer is in a position to determine expected loss activity, in terms of both frequency and severity, with any great certainty. As a result, the insurer must select an appropriate level of retention that not only satisfies local solvency requirements but also is unlikely to impair its existing capital and is likely to allow for a profit after reinsurance costs and recoveries.

Even if the insurer is able to find excess-of-loss capacity at the desired level, the excess-of-loss reinsurers may reflect their uncertainty with regard to the potential exposure and perceived loss activity by limiting the scope or amount of cover provided, inflating the premium charged, or possibly all three. In practice, however, reinsurers' appetite for MTPL excess-of-loss coverage has proved remarkably resilient over many decades, and coverage is usually available at attractive terms.

Excess-of-loss reinsurance has been the leading structure used by MTPL insurers around the world, consistently for the past 50 years. In Europe, it is more or less a compulsory regulatory purchase. In jurisdictions where policy limits apply at manageable levels, some insurers are large enough to accept motor insurance without any reinsurance at all, but in most developing countries, insurers will almost always want to take out an excess-of-loss protection unless (as happens, for example, in Taiwan, China) both the local legal limits and the cross-border exposures are small enough to make excess coverage superfluous.

Risk Pooling

Risk pooling as a stand-alone solution does not transfer all of the risk from the members of the pool. Each member is still exposed to a predefined proportion of the frequency or severity of loss events covered by the pool. The funding

of these exposures is still borne by members in the form of higher levies or higher premiums, unless a common reinsurance solution can be found.

Pools tend to cause more problems than they solve, the main cause being the appropriate allocation of the levy or premium and any loss activity arising from the risk class between participating members. For example, a simple, standard monetary contribution per insured vehicle could mean that two insurers with vastly differing risks will pay to the pool the same contribution per vehicle. As a result, some members will inevitably feel that they are overfunding or underexposing the pool to the class or type of risk protected in comparison with other members, thereby inadvertently benefiting their competitors. A further concern lies in the fairness of the commissions payable by the pool: some insurers with a certain mix of vehicle types may find that the commission structure scarcely matches their costs, but others may find that it suits them well.

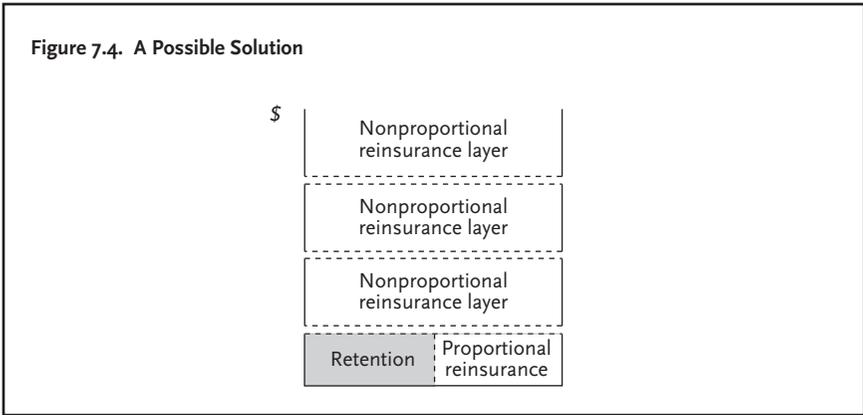
Summary

All risk transfer mechanisms rely on an appropriate premium being ceded for the risk assumed. It is never easy to quantify the exposure in jurisdictions other than one's own, and for many European countries, the impact of the higher MTPL limits imposed by the third and fifth directives is unknown and untested in respect of the domestic exposures protected thereunder. These uncertainties give rise to a complex range of considerations in designing an appropriate reinsurance response. However, every insurer is different: some have tight capital constraints, others are relatively free of such concerns, some have a substantial risk appetite, others prefer a more cautious line. As a result, it is likely that each insurer will want to consider all of the risk transfer solutions described above before choosing a satisfactory solution.

A Possible Solution

While none of the proposed individual risk transfer solutions can be considered particularly suitable in the absence of knowing the requirements of

Figure 7.4. A Possible Solution



the individual insurer, combining the benefits of the cover afforded under nonproportional and proportional reinsurance in tandem offers the benefits of both types of reinsurance arrangements (see figure 7.4). This type of design might suit an insurer with relatively low capital strength and limited risk appetite; but all things are relative in these matters, and finding a suitable design requires professional analysis and advice.

The structure in figure 7.4 allows the insurer to retain a fixed monetary amount per claim. Over time, the insurer may seek to reduce the quota share cession as confidence in and experience with the compulsory MTPL regime increases. Alternatively, should the quota share produce a consistent and demonstrable level of profitability, the insurer could retain the cession percentage but seek to improve the terms and conditions of the quota share agreement. Conversely, the insurer could increase the amount ceded to quota share reinsurers, thereby reducing its exposure should the new legal framework produce an unforeseen frequency or severity of losses.

Obtaining Reinsurance Coverage: Theory versus Practice

While this may be considered a theoretical solution, practical difficulties are associated with securing the best or most appropriate theoretical form of reinsurance coverage. Reinsurers need to be able to measure and determine, with a degree of certainty, the expected loss activity for any and all expo-

tures ceded to them under the reinsurance agreement. There are two main methods for estimating loss activity in respect of these exposures: experience and exposure rating.

As the name implies, *experience rating* relies on the previous loss experience of a portfolio to generate an expected cost of losses. In its simplest form, the cost of losses is generated by summing the losses to the reinsurance cover and dividing by the number of periods observed.

With *exposure rating*, in the absence of claim activity, the reinsurer can attempt to pool historic claims data from consistent and generic exposures to construct an aggregate probability distribution function, in much the same way as the experience rating method, thereby generating an expectation of loss at varying thresholds.

Both methods rely heavily on historic claim activity being a reasonable guide to future expected loss activity. The total expected claim activity in any one period is defined by the following formula: total expected losses = expected loss frequency x expected loss severity. As a result, any change in the expected frequency or severity of losses will have a heavy impact on the total expected cost of losses and therefore on the availability and cost of reinsurance cover.

Introducing compulsory MTPL insurance or raising the minimum statutory limits for MTPL insurance, coupled with the freedom to travel to differing jurisdictions, presents a very real probability of both increased frequency and severity of loss. As a result, reinsurers are likely to err on the side of caution and to introduce conservative assumptions into the underwriting decision, in the form of the premium charged or coverage afforded.

Conversely, the insurer could argue that, despite the increase in the minimum statutory limits, if the underlying legal regime is unchanged, there will be little to no change in the compensation culture. As a result, the expected frequency and severity of loss will not change, and the new limit is theoretical only and serves to satisfy the new requirements.

The reality is that neither the insurer nor the reinsurer knows the true impact of the change in law. The insurer requires reinsurance to protect against this unknown, and the reinsurer must charge a premium that will service the capital allocated to the reinsurance agreement and, it is hoped, return a profit to cover loss scenarios not provided for under the prior legal framework. As a result, the insurers often feel that they are being asked to pay

too much for scenarios never before experienced; alternatively, the reinsurers feel that the premium being offered is insufficient to service the capital allocated and return an adequate profit.

To a certain degree, partnering with a major reinsurer can provide benefits, such as underwriting and claims expertise or even multiyear capacity. However, it is unlikely that one reinsurer alone will be able to satisfy all reinsurance requirements. In any case, best practice requires that an insurer should spread the reinsurance security exposure among a panel of reinsurers. As a result, the insurer must be able to demonstrate to potential reinsurance partners a comprehensive understanding of the regulatory framework's original market practices and, even then, be willing to accept treaty terms and conditions that give the reinsurers the degree of comfort they require before they accept hitherto unknown exposures.

In summary, when past loss activity is no longer a reasonable indicator of future expected loss activity, the validity of either pricing method is called into question. Accordingly, any legal change in respect of MTPL insurance is likely to attract the attention of reinsurers and result in the use of conservative assumptions with regard to the potential frequency and severity of losses.

Naturally, the degree of conservatism will vary according to the risk appetite of the reinsurer and the reinsurance capacity available. Furthermore, the nature of the reinsurance treaty in question—proportional and nonproportional—will also be affected to differing degrees by the differing assumptions in respect of both expected frequency and severity of loss.

Mitigating the Impact of Restrictive Reinsurance Coverage

As mentioned, in order to secure the appropriate reinsurance support, insurers need to be able to assess adequately the risk that reinsurers are being asked to assume and to charge the appropriate premium for the exposure they are assuming. Providing detailed and requisite information to allow potential reinsurers to measure and price the exposure appropriately is crucial. While not exhaustive, this section provides a brief summary of the key basic information that reinsurers will need to assess and appropriately price the structure outlined above.

With nonproportional reinsurance, the reinsurer will usually require the following information:

- Historic premiums for the protected class for the preceding five years
- Historic development of individual claims, split paid and outstanding, exceeding 50 percent of the proposed retention for the preceding five years
- Details of types of vehicles insured.

With proportional reinsurance, the reinsurer will require the following information:

- Historic premiums for the portfolio for the preceding five years
- Historic development of paid and outstanding losses for the portfolio for the preceding five years
- Details (cost and structure) of common account excess-of-loss protection benefiting quota share reinsurers
- Details of individual claims exceeding 50 percent of the proposed quota share limit for the preceding five years
- Details of the types of vehicles insured.

Free-market economics dictate that the more detailed and specific is the information supplied to reinsurers, the more the cost of that reinsurance coverage will tend toward the rational. Of particular benefit is a clear and consistent approach to the quality and quantity of information supplied across a geographic market and generic risk class, as this allows reinsurers to view that class and market as a whole in a consistent manner.

Case Study: The Spanish Experience

During the early 1990s, Spanish MTPL insurance found it difficult to attract and obtain MTPL excess-of-loss reinsurance capacity. Even though MTPL insurance was a relatively mature class with a clear legal framework, the

application of the law varied significantly across the differing regions and even within the same region according to the individual circumstances of the injured third party and the attitude of the judge overseeing the court case. As a result of this fluctuation in claim severity, both insurers and reinsurers not only were unable to determine with any degree of confidence the ultimate expected claim activity in any given year, but also found themselves involved in expensive and time-consuming litigation contesting and appealing awards handed down by the judiciary.

The introduction of indemnity tables in 1995, commonly referred to as the *Baremo*, prescribed award levels, updated annually in line with inflation, according to the extent of the injury suffered and the individual circumstances of the third party. This seemingly cast-iron legal framework gave insurers and reinsurers a degree of certainty in respect of claim awards. Nevertheless, given past experience, the reinsurance market—and to a degree the insurance market itself—was skeptical in the absence of the demonstrable application of the *Baremo* by the courts.

The solution to this uncertainty was to structure the majority of excess-of-loss programs to provide and potentially pay for a range of loss frequencies in the working area—that is, swing-rated layers. The premium payable under these “swing-rated” layers is a function of the loss activity to the layers, subject to an overriding minimum and maximum premium payable. The uncertainty created by the change in law was addressed in the structuring and pricing of the reinsurance program. As a result, reinsurance capacity was attracted back to this class of business.

In the years following the introduction and application of the *Baremo* and the certainty it provided in respect of expected claim activity, not only have the costs of litigation declined significantly, but the pace and speed of claim settlements have accelerated dramatically. There is, after all, little point in contesting a settlement offer in line with the published indemnity tables.

With the increasing certainty in respect of claim activity, over time reinsurers became willing to offer traditional excess-of-loss capacity for a fixed percentage of the premium. The more reinsurers saw the impact of the application of the new law, the more attractive the class became, and supply and demand, as a result, dictated that reinsurance premiums declined to a more appropriate level.

Given these changes, MTPL insurers in Spain currently have little trouble attracting and retaining reinsurance capacity. Furthermore, the certainty insurers have in respect of the frequency and severity of claims has allowed them to structure their reinsurance programs to suit their individual needs.

Conclusions

The reinsurance market is cyclical in nature. Over time, the capacity, appetite, and cost for given classes or types of reinsurance coverage vary; as a result, so do the required returns (profitability) of reinsurers.

By using both proportional and nonproportional reinsurance as risk transfer mechanisms, reducing or increasing quota share cessions, or reducing or increasing the level of retention under the excess-of-loss program, as appropriate, the insurer can attempt to limit the impact of such cyclical variations by benefiting from differing risk appetites, over time, in the reinsurance marketplace, while retaining an appropriate level of risk and ensuring that its capital is not unduly exposed. However, any change in law affecting MTPL insurance introduces “unknowns,” and the result of these unknowns for the availability and cost of reinsurance protection will be governed largely by where the reinsurance market is, in the cycle, at that point in time.

Detailed knowledge of the underlying portfolio and the marketplace, coupled with a well-defined legal framework and compensation regime, should ensure the availability of reinsurance capacity, ultimately, at a price in accordance with the exposure ceded to the reinsurance market.

CHAPTER 8

Pricing and Political Economy: The Indian Experience

K. N. Bhandari

The evolution of third-party liability jurisprudence in India can be traced to enactment of the Fatal Accidents Act in 1855. Prior to that, fatal accidents were the subject of adjudication under the common law. The law only recognized fatalities; bodily injuries, both simple and grievous, were outside the scope of law. The liability of the wrongdoer was deemed to be governed primarily by the law of torts, and the consequence of actionable wrong was to include, in addition to action under criminal law, civil liability to compensate families for loss occasioned by the death of the victim. A vital aspect of the Fatal Accidents Act was that such action could only benefit the wife, husband, parents, and children; other dependents, if any, were excluded.

Such limited law was perhaps relevant to the socioeconomic conditions of India at that time. With the dawn of an industrial economy and the advent of motorized vehicles, it became necessary to provide for a broad-based system of faster, more comprehensive relief to the victims of fatal accidents and their dependents. It was also felt that economic loss to the injured victims in most cases is also significant and that it is inequitable to exclude them and to exclude the loss of property from the ambit of the law. The chief concern then was to ensure that all vehicles on public thoroughfares carry third-party

insurance so as to facilitate the recovery of financial damages. The Motor Vehicles Act was passed in 1939 and subsequently amended several times to address such concerns.

Features of the Law

Specific provisions were made to ensure that all vehicles on a public thoroughfare have insurance that complies with the requirements of law. The law does not provide for any exception to this rule except in the case of central or state governments, which can be exempted from the requirement provided they establish a fund for meeting any liability arising out of the use of a vehicle owned by them.

In order to comply with the legal requirements, the insurance policy must (a) be issued by an authorized licensed insurer and (b) insure the owner of the vehicle against any liability incurred by him or her in respect of death, bodily injury, or damage to the property of a third party and, in the case of public service vehicles, in respect of death or bodily injury to passengers. With respect to death or bodily injury, there is no limit to liability. With respect to property damage only, the limit of liability shall not exceed R6,000 (Indian rupees), corresponding to approximately US\$120. This sum has not altered with the passage of time; inflation has therefore heavily eroded its real value. While it would be impractical to raise this limit to a level that would compensate for all values of vehicle, it would nonetheless be desirable to see a substantial increase to, say, R100,000 corresponding to US\$2,000.

In 1982, a provision was incorporated in the act to provide immediate and interim relief to the victims on the principle of “no fault.” It provides for a fixed compensation to the claimants in cases where the vehicle causing the accident has been established. The claimants are not required to establish that the accident was due to any wrongful act, neglect, or fault of the vehicle. This provision is a departure from common law, which says that the claimants are entitled to damages on the basis of negligence. In the case of no-fault liability, whether there is a fault or not or whether there is negligence or not, liability devolves on the person who caused the accident.¹ Thus the simplifica-

1. The concept of no-fault liability is akin to the concept of absolute liability, with one difference. In India establishing negligence or contributory negligence of either of the vehicles involved

tion turns on an apparently delicate nuance: you have to show which vehicle caused the accident, but you do not have to prove that the driver concerned was negligent.

Adjudication of MTPL Claims

To facilitate the expeditious settlement of claims arising from the use of motor vehicles, Indian law provides for the establishment of motor accident claims tribunals. These have been operational since at least the 1938 legislation. The state governments are empowered to constitute as many tribunals as they deem necessary, but the law specifies the qualifications for persons to be appointed as members of the tribunal. These tribunals are subordinate to their state high court, which handles appeals.

Several special features are specific to these tribunals:

- The tribunal can treat any accident report filed with it by the police as an application for compensation and does not have to wait for a formal application by the victims or their dependents or agents.
- The tribunal has all the powers of a civil court.
- The tribunal has powers to award interest and costs in addition to compensation.
- The compensation awarded by the tribunal can be recovered through a relatively simple process.
- The tribunals alone are empowered to adjudicate all matters relating to any claim for compensation arising as a result of a motor vehicle accident. The civil courts are specifically barred from entertaining any claim pertaining to matters under the jurisdiction of tribunals.

in an accident is time consuming and results in prolonged legal proceedings. Therefore, if the claimants wish to dispose of their claims quickly and do not wish to claim damages under fault liability provisions, they may opt to enter their claim under the no-fault liability provisions of the Motor Vehicles Act, which provides a structured table of benefits to the claimants linked to the age and income of the victim. This is relevant to both simple and grievous injuries. This obviates the need to produce strict proof of negligence before the court, which may be difficult in many cases. Insurance companies also have an arrangement that allows them to avoid litigation; this is known as the “knock-for-knock” agreement, in which each insurer takes care of the damages of the vehicle insured with it, ignoring whose negligence caused the accident. This agreement is for the material damage to the vehicles and does not extend to MTPL claims.

An important feature of Indian law is that it restricts the right of the insurers to defend an action against them only on grounds specified under law. This provision is based on the premise that, once a judgment has been obtained against any person insured by the insurance policy, the insurer should not be entitled to delay or deny the payment due to the claimants. The act therefore provides that an insurer can defend an action against it on the following grounds only:

- Use of the vehicle that is excluded by the policy, such as speed testing or organized racing
- Use not allowed by the permit, such as for hire or reward
- Driving by a person not duly licensed or disqualified from obtaining or holding a driver's license
- Void of the policy on the grounds that it was obtained by failure to disclose a material fact or by misrepresentation of a fact
- Conditions of war, civil unrest, riot, or civil commotion.

Structured Compensation Formula

Determining fair and reasonable compensation to the victims of a road accident is considered to be a complex, time-consuming process that often delays compensation even in genuine cases, especially when several factors influence the amount of compensation. In Indian common law, no provision is made to lay down a specific formula or rule to determine fair and just compensation, as it would depend on the facts and circumstances of each case. It is therefore left largely to the discretion of the tribunals and courts to decide on equitable and fair compensation based on the facts of each case placed before it for adjudication. This provision also conforms with the law of torts.

However, Indian experience suggests that, in most cases, the process of determining fair and just compensation leads to enormous delay, defeating the purpose of socially meaningful legislation. Thus, in 1994, the lawmakers decided to incorporate an additional provision for definite structured compensation payable to victims based on their age and income and made it optional for the claimants to choose either of two options: (a) compensation based on a structured formula including age and income of the victim or (b)

compensation based on the dependents' actual loss of income, which is quantified using a predetermined multiplier linked to the age of the deceased, the maximum multiplier being 18 times the victim's annual income.²

The schedule of structured compensation as enshrined in law is not arbitrary; it is based primarily on a formula laid down by the apex court—the Supreme Court of India—through its judgments pronounced over a period of more than three decades. The matrix of compensation-based awards by the Supreme Court attempts (a) to simplify the quantification of the amount of compensation payable to the victims so that this is not left entirely to the discretion of each tribunal, leading to uncertainty and giving rise to grounds for appeals, and (b) to bring about a uniform approach to the quantification of compensation.

Accidents to Be Informed to Tribunals and Insurers by the Police

A specific provision in the India Motor Vehicles Act, 1938, requires the police to report all relevant information regarding an accident involving death or bodily injury to the claims tribunal, to the concerned insurer, and to the owner of the vehicle. This provision has been extremely useful, as experience suggests that most owners do not report accidents to the insurers or tribunals. The victims often are unable to collect all of the information necessary to file a claim before the tribunal, resulting in avoidable delay. As mentioned, the tribunals are empowered to treat the accident report submitted by the police as a claim application and to adjudicate on the matter without delay. Moreover, the police report obviates the need to produce independent evidence for information already verified by the police, which helps to expedite the adjudication of claims.

2. The second method of computation is intended to ensure that young victims receive more compensation than older victims. This method of fixing compensation is also applied generally in cases involving permanent total or partial disability, along with suitable compensation for medical treatment and other nursing and support services.

Solatium Fund for Victims of Hit-and-Run Motor Accidents

In some accidents, the vehicle involved cannot be identified, as it leaves the scene to avoid involvement with the police. The victim therefore is unable to claim any compensation from either the insurer or the owner of the vehicle. To provide relief to the victims of such hit-and-run accidents, the Motor Vehicle Act in India has a special provision for establishing a solatium, or guarantee, fund to pay specified compensation to the victims or their dependents, as the case may be.³ All liabilities of the fund are presently shared equally by insurance companies. The scheme provides relief to the victims of hit-and-run accidents, but the level of compensation specified in the act is considered to be grossly inadequate and requires upward revision to make this provision meaningful to the victims or their dependents.

Effectiveness of the Existing Legal Framework

The existing legal framework is grossly inadequate in the context of the rapidly growing number of claims. The capacity of roads has not kept pace with the number of vehicles, which is likely to double every five years for at least the next two decades. As a result, India has the highest rate in the world of accidents per 1,000 vehicles and a backlog of more than 1.5 million claims pending before tribunals. This backlog is likely to grow unless corrective measures are implemented quickly. One such effort has been to establish alternative forums for resolving claims. However, many claimants view the alternatives as an effort to deny them adequate compensation, and the legal system needs to be reformed to make alternative forums for resolving claims more attractive to claimants.

In India, of all the claims registered with the tribunals, nearly 30 percent involve fatalities or grievous injuries, and the remaining 70 percent involve simple injuries where the claimed compensation rarely exceeds R1,000 to

3. A solatium fund is essentially a guarantee fund. In the case of a solatium fund, however, the compensation provided has no relation to the actual loss sustained by the dependents of the victim.

R2,000. It is, therefore, imperative to devise a streamlined system for handling simple injury claims to enable the tribunals to focus on more serious cases.

Pricing Policy

The cost of claims is rising for several reasons:

- Inflation
- Rising income levels, as compensation is linked directly to income of the victim
- Growing awareness that vehicle owners are liable for accidents involving property or individuals
- Significant increase in the average income of road users, resulting in a proportionate increase in compensation levels
- Improved life expectancy of road users, resulting in higher costs of claims
- Increasing cost of medical care for injury cases
- Increasing cost of claims management and litigation.

As the costs of claims rise, ensuring adequate pricing for MTPL insurance cover assumes great urgency.

Until 2001, the Indian non-life insurance market was being serviced by state-run insurance companies with a total monopoly of the market. Pricing segments in property and motor vehicle insurance were being regulated by rates fixed by a statutory body called the Tariff Advisory Committee (TAC). Insurers furnished TAC with regular statistics on all classes of tariff business. Changes in rates were based on statistics compiled by TAC. The industry was nationalized in 1973. The tariff system continued, but over time insurers stopped submitting statistics, and the revision of administered pricing fell into disuse. The wide mismatch in the warranted price based on the cost of claims and the price fixed by TAC created severe imbalance and led to constraints on the supply side.

With the opening up of the market in 2001 and the entry of private insurance companies, there was clear recognition that price distortion in MTPL insurance had to be corrected without delay. The private insurers were

unwilling to cover MTPL, and the state-owned companies were being saddled with almost the entire loss-making MTPL portfolio, causing severe overall underwriting loss to them. This led to growing reluctance on the part of state insurers to provide this cover at the current tariff rates. The TAC came under tremendous pressure to revise prices upward and to ensure that losses in this portfolio are equitably shared. The biggest handicap in arriving at rational and transparent pricing has been the absence of credible data to support and justify an almost 200 percent increase in the cost of MTPL insurance.

The first step in addressing the mismatch was for the regulator to collect and validate the requisite data. Since the insurers were not on identical technology platforms, the task of collecting and collating data in respect of millions of past policies and claims was indeed Herculean. After nearly two years of hard work and investment of significant resources, TAC was able to present only partial data that were considered to be a reliable sample for working out a rational pricing policy for MTPL insurance. The regulator presented the data to all the stakeholders and followed this up with extensive discussions spread over several rounds. The toughest resistance to the regulator's proposals came from representatives of the Transporters Association, who objected on the following grounds:

- MTPL insurance is mandatory under law, and the state should meet the liability that is enjoined by statute. Mandatory MTPL insurance, according to their view, is akin to an indirect tax.
- The operators of goods and passenger vehicles are not in a position to pass on the cost of insurance to the users of their services.
- Most road accidents are caused by the fault and negligence of the victims themselves, and hence the transporters ought not to shoulder the burden.
- The most important factor contributing to road accidents is the poor condition of roads and the state's failure to enforce the traffic rules.
- The data, though validated by the regulator, are largely subjective and do not represent the actual liability of the insurers.

The essence of their arguments was that, since the entire scheme of relief to the victims of road accidents is deemed to be a socially beneficial measure,

the cost must be subsidized by the state or other stakeholders. The transporters should not be saddled with the entire cost.

Despite strenuous efforts, the regulator was unable to persuade the transporters to agree to his proposals for revising the pricing of MTPL insurance. There was thus an impasse, as the transporters threatened to go on strike if the regulator made a unilateral decision. The regulator eventually proposed and received only half of the warranted increase in the cost of MTPL insurance for commercial vehicles. However, the increase in the cost of MTPL insurance for all other classes of vehicles was granted on actuarial calculations based on a 75 percent loss ratio derived from historical data.

The regulator simultaneously announced the creation of a motor insurance pool. The pool was designed as a multilateral reinsurance arrangement among all the insurers licensed to transact motor insurance business in India. The arrangement provides for pooling the entire MTPL premium collected by the insurers at the rates notified by the regulator. Similarly, all claims paid or incurred are also pooled, but not shared in proportion to their contribution to the premium pool. Rather, they are shared in proportion to the gross direct premium underwritten by all insurers in India. This arrangement for sharing of profit or loss is intended to ensure that all insurers participate in MTPL insurance. Another incentive provided in the arrangement is that each underwriter is entitled to receive 10 percent of the premium collected for MTPL to meet administrative costs. Since the insurance cover for MTPL is compulsory for all vehicles, no procurement intermediation cost is payable.

To date, the Indian motor insurance pool continues to run a deficit, and the position is unlikely to improve as long as the premium rates for MTPL insurance of commercial vehicles are not linked to actuarial calculations based on claims outgo.

One of the rationales behind the fixed tariff during the preliberalization period was to arrive at a uniform rate structure based on an assessment of aggregate risks. The TAC followed a consistent policy in adopting coverage according to international market practices while fixing prices in tune with the claim experience of global prices in the Indian marketplace. In fact, the tariff regime implemented a low-cost model of insurance and helped to consolidate and strengthen the Indian insurance market.

After liberalization and the entry of private players in India, it was felt that the tariff regime in property and motor insurance had outlived its utility and was no longer relevant. There was a strong view that, without free-market rates, consumers could not enjoy the benefits of competition among insurers. It was argued that competition would lead to a rationalization of rates and bring an end to cross-subsidization among various products. The insurers would have to price their products according to a more scientific assessment of risks and promote safety standards as well as better risk management by the insured. In 2006 the regulator laid down a roadmap for a phased process of detariffication and finally introduced the end of tariffs in 2007.

As experienced in other world markets, the liberalization of tariffs in India gave rise to a price war among insurers, leading to a significant reduction in tariff rates. The readjustment of rates and the realignment of portfolios have continued for almost two years, but there are signs that rates are beginning to stabilize. In any case, there is now greater reliance on historical data, and risk perceptions based on that information are guiding the rating and underwriting of risks in India.

Road Map for a Free-Market Tariff Regime in India

Following the opening up of India's insurance market in 2001, Indian insurers demanded the removal of fixed tariffs for various classes of business, such as property and motor insurance, arguing that they are contrary to free-market principles and that insurance products need to be priced by market forces. The Insurance Regulatory and Development Authority (IRDA) accordingly announced in September 2005 its intention to remove fixed tariffs by December 31, 2006. The insurance market was given about 15 months to put in place internal capabilities, procedures, and controls to ensure a smooth transition from a fixed-tariff regime to a market-determined tariff regime. The time frame was subject to the insurer's successful implementation of guidelines and compliance with the stipulated standards.

This section briefly summarizes the steps taken by insurers during the preparatory period of 15 months.

Underwriting

The function of insurance underwriting and rating should be independent of the business development function and not be subservient to the business growth function. For operating convenience, every insurer must have a base rate for smaller, simple risks. Staff authorized to accept business will be trained to evaluate proposals and underwrite and rate risks according to the rate guide. Risks not covered by the guide must be referred to underwriters with a higher level of authority. These underwriters will be trained in evaluating risks, securing required inspection reports or risk evaluation reports, underwriting and rating the risks, and determining the terms and conditions of cover.

These underwriters with the authority to accept or decline risks and to quote rates and terms will not report to any officer with business development responsibility; they will only report to a senior-level officer whose work and performance will be assessed on the basis of the results of the business underwritten.

A core team of well-qualified underwriters will undertake an internal audit of the underwriting efficiency of the underwriters. Where an underwriter is found to be wanting in skills, he will receive further training. Where he is found to be careless or lacking diligence, his authority will be withdrawn.

Risk will be evaluated either by an internal risk inspection team or by outside experts. Both will be totally independent of the business development staff and will only report to the head of the underwriting function or department.

All management reward schemes must be based on profit.

Rating Support

The appointed actuary, in association with experienced senior underwriters of the insurer, will be responsible for listing the factors to be looked at for every subclass of business and every type of risk. He will also be responsible for drawing up and periodically reviewing the internal guideline for rates.

Having identified the risk factors, the appointed actuary should ensure that all required data on the rating factors are captured for every insurance

policy underwritten by the insurer and for every claim. He should work with staff in the information technology department to design the system for collecting, compiling, and analyzing data on premiums and claims. Such analysis should lead to a periodic review of the internal rate guide and also serve as the technical input for underwriting.

The claims manager should be required to notify the underwriting staff of any information of importance for the underwriting of risks. Similarly, underwriting staff should study the reports produced by the Loss Prevention Association of India, and their underwriting policy should take note of any relevant information from such reports.

Policy Terms and Conditions

All insurers will start with the policy terms and conditions for existing tariffs. However, an insurer may review the terms and conditions and make changes for use after the rates have been approved by IRDA. IRDA will evaluate the language of the cover, underwriting prudence, and technical soundness of the changes.

Risks that are rated on the basis of international market terms may continue to be governed by terms and conditions acceptable to reputable reinsurance markets.

Corporate Governance

Every report of the chief executive officer to the board of directors must also comment on the emerging claims experience of the business and the adequacy of the current underwriting and rating levels. Such reporting should be carried out at least twice a year. Each insurer should have a compliance officer who will ensure that the system functions as expected.

Tariff Advisory Committee

With the abolition of tariffs, the role of the Tariff Advisory Committee will change to encompass the following functions:

1. Collect data on premiums and claims, analyze such data, and disseminate the results to the insurers
2. Report to IRDA on the health of the market and any aberrations in market behavior
3. Constitute expert groups at the behest of the General Insurance Council to look into underwriting issues and recommend necessary action
4. Organize training to underwriters at the market level
5. Attend to public grievances regarding the lack of availability of insurance and try to resolve the issues with insurers.

Schedule for Implementation

In order to ensure the smooth functioning of the market after the removal of tariffs (December 31, 2006), all necessary action for the following functions should be taken by the target completion dates.

For the underwriting function,

1. Determine the underwriting setup within the organization: December 1, 2005
2. Determine the classes of risks to be governed by internal tariffs and the classes that will be underwritten individually: December 1, 2005
3. Prepare interim internal tariffs based on available underwriting information within the company: March 31, 2006
4. Train underwriting staff: August 1, 2006
5. Train higher-level underwriters: October 1, 2006
6. Set up the underwriting audit procedures, identify the auditors, and train them: November 1, 2006

7. Set up the risk inspection machinery and train the inspectors: August 1, 2006.

For the policy terms and conditions function,

1. Review current policy terms and conditions and recommend changes: May 1, 2006
2. Adopt new policy terms and conditions after approval by IRDA: date to be announced
3. Train underwriting and claims staff in the use of the new terms and conditions: October 31, 2006.

For the corporate governance function,

1. Prepare a detailed document of all activities related to the move to a market-based regime and submit it to the board: December 1, 2005
2. Issue section guidance and obtain approval of the board for the proposed activities: January 1, 2006
3. Prepare the outline of the periodic report to the board on the underwriting performance of the insurer: April 1, 2006
4. Set up a system for compiling information for the periodic report: June 1, 2006.

IRDA, through an order dated December 4, 2006, notified the industry that the rates, terms, conditions, and regulations applicable to fire, engineering, motor, workers compensation, and other classes of business under the tariff regime were no longer in force as of January 1, 2007. The other salient features of this order were as follows:

1. The regulations (other than those relating to rates), terms, conditions, clauses, warranties, policy, and endorsements applicable to the above-mentioned classes of business are to continue. The only change is that rates are going to be market determined.
2. MTPL insurance shall be underwritten according to rates determined by IRDA.

3. The insurers cannot cancel the current policies and issue new policies covering substantially the same properties or interests in order to alter the premium rates and thus pass on any undue benefit in the interim.

Simultaneously, IRDA also issued a directive mandating that all insurers shall collectively participate in a pooling arrangement in which all MTPL insurance business underwritten by any registered general insurer in India will be shared. The salient features of the mandatory MTPL insurance pool are as follows:

- *Participation.* Every registered insurer will participate automatically in the pooling arrangement as stipulated.
- *Pooling mechanism.* Business will be pooled among all insurers through a multilateral reinsurance arrangement between the underwriting insurer and all the other registered insurers carrying on general insurance business.
- *Sharing of pooled business.* The pooled business will be shared among all of the participating insurers in proportion to the gross direct general insurance premium for all classes of general insurance underwritten by them in the financial year.
- *Underwriting of business.* No vehicle owner will be denied third-party insurance cover, and the business will be underwritten at rates, terms, and conditions of cover as notified by the regulator.
- *Administration and claims settlement and processing.* The General Insurance Council (an association of insurers) will issue instructions from time to time adopting efficient and proactive settlement of claims and balances among insurers.
- *Data management.* The Tariff Advisory Committee under the control of the regulator will work as a national data depository to be assigned the task of collecting data from the insurers for use both by the regulator and by the industry.

Calculation of Base Premiums for MTPL

Ideally, the pricing for any class of insurance business should be such that determined rates, when applied to the exposures underlying the risk being written, (a) provide sufficient funds to pay expected losses and expenses, (b) maintain an adequate margin for adverse deviation, and (c) produce a reasonable return on (any) funds provided by investors. Prices for insurance products are generally subject to regulatory review, and this review is often based on the regulatory standard that prices shall not be inadequate, excessive, or unfairly discriminatory between the risks of like kind and quality. These general principles of risk rating also apply to MTPL insurance. The base rates represent precise estimates based on reasonable and consistent assumptions.

The base premium method develops rates based on the following formula:

$$R = (P + F) / (1 - V - Q)$$

where

R = rate per unit of exposure

P = pure premium

F = fixed expenses per exposure

V = variable expenses factor

Q = profit and contingencies factor.

Motor insurance in India is priced as follows:

- There is total free pricing of motor own damage insurance.
- The rates for MTPL insurance are administered by regulations.
- The losses of the third-party liability segment are cross-subsidized.
- Commercial vehicle insurance is brought into the pool for third-party liability claims.
- Motor insurance is still available at 2–3 percent of the value of the vehicle, depending on the class of vehicle (the lowest rate in the world, where rates range between 5.5 and 7.5 percent).

- Third-party insurance primarily covers the liability of the owner. Liability of the driver is also included as a vicarious liability of the owner, irrespective of the number of persons allowed to drive the vehicle.
- The statutory legal liability is unlimited.
- For motor insurance pricing, class plans are used that consider variables such as use of the vehicle, horse power cubic capacity of the engine, passenger or carrying capacity, make and model of vehicle, and so forth.
- There is no concept of high-risk drivers having to pay higher premiums.
- A discount for a favorable claim experience follows the fortune of the insured, including own damage claims. Third-party liability claims are not factored into discounts on the base premium.
- Premiums are not raised to account for an adverse claim experience.
- Low-risk customers often wish to protect their assets more fully, whereas high-risk customers (especially the owners of older vehicles) often select bare-bones coverage needed to satisfy the legal requirements.
- There are no deductibles on claims.

Like many other countries, India has devised a risk factor rating system. Under this system, the premium for any class of vehicle is calculated as a product of the base premium (which may be labeled a pure risk premium) and relativity factors loaded or discounted for various risk categories.

The purpose of any classification plan is to reduce the rates for the better risks and to offset this reduction with an appropriate increase in the rates for the more hazardous risks. Underwriters have recognized that class plans currently in use do not precisely classify each risk according to its true value. Likewise a class plan that uses only the previous accident history does not precisely classify each risk. Class plans are required to be substantiated by merit-rating plans to separate the better risks from the poorer risks, because motor risks vary considerably. The bonus-malus system is being tested to determine whether it is capable of separating the good from the bad risks.

The common analysis approach is slowly gaining acceptance. This would facilitate the sharing of experiences and useful data, which has always been an obstacle for insurers. This would be of great benefit for any insurer,

since historically so little has been done with such data. By enabling the sharing of knowledge, the common analysis approach would also improve pricing capabilities.

Given regional differences within India, the markets, the structure and availability of data, and the need to work from the micro level, those companies that will profit the most are those that make the most effective use of the data. In the long run, continuous access to and use of data in the repository will be a criteria of success.

Actuarial Variables

The key to developing a viable, sustainable model is the ability of insurers to price MTPL insurance coverage correctly. To ensure adequate pricing, the Indian market has been following the globally accepted practice of taking into account the premium actually earned and the claims cost actually incurred. For this purpose, insurers are required to make provisions in their books for the premium not actually earned and for the claim actually incurred, that is, they are required to create “technical reserves.” These reserves are necessary not only for arriving at a warranted rate of premium but also for assessing solvency, determining profitability, and conducting business planning and claims management.

The treatment of the two broad categories of technical reserves—claims reserves and premium reserves—follows the generally accepted worldwide practice, which is summarized briefly in this section.

Reserve for Outstanding Claims

The provision for outstanding claims is computed separately for each claim involving a fatality based on the information available in respect of the victim’s age, income, and dependency in the event of fatality and, for injuries, based on the nature of the injury, expenses incurred for treatment, and loss of income, if any. Claims settlement costs, including investigation and litigation costs, are also provided for and included in the calculation of such provisions separately for each claim. For claims outstanding for more than one year,

insurers also take into account the interest liability and add it to the provision for each outstanding claim.

Reserve for Claims Incurred but Not Reported (IBNR)

There is generally considerable time lag in the occurrence of an MTPL claim and its submission to the insurer. More often than not, insurers receive advice in respect of accidents giving rise to MTPL claims only after the claimants have filed their claims with the tribunals. The time lag in most cases could be six to 12 months, particularly because Indian law does not provide for a statute of limitations for filing such claims before the tribunals. In order to ensure that such claims are included in the provisions made for the purpose so that final accounts at the end of each financial year reflect the true, fair, and reasonable position of the claims liability of the insurer, insurers are required to make adequate provision for claims incurred but not reported. Such provision is based on historical data of previous years, using statistical methodology to reflect an adequate provision on aggregation.

Reserve for Claims Incurred but Not Enough Reported (IBNER)

This reserve is made in addition to the reserve for claims incurred but not reported. This is essentially to reflect the difference between the actual claims paid and the provisions made earlier on the books, orphan claims, prematurely closed claims, and repudiated claims. The provision for both IBNR and IBNER is a percentage of net liability of outstanding claims based on previous experience as deduced from historical data.

Unexpired Risk Reserve

The Indian Insurance Act creates the basis for an unexpired risk reserve for the MTPL portfolio of 5 percent of the net premium accounted for by

insurers in respect of any financial year. The basis is not only simple but also adequate, as evidenced by Indian experience over several decades.

CHAPTER 9

Motor Third-Party Liability Insurance: From Statutory to Liberalized Motor Tariffs

Serap O. Gönülal and Denis Chemillier-Gendreau

A fundamental principle of any type of insurance is that if the insurers are to sell coverage willingly, they must receive a premium that is sufficient to fund their expected claims costs and administrative expenses and earn sufficient profit to compensate for the cost of obtaining the capital necessary to fund the solvency margin. In fact, an insurer will only survive if it charges adequate rates consistently over time for the risks it accepts. This is particularly relevant in general insurance and in motor business, where risks can be very volatile and the cost of meeting claims is constantly under pressure from inflation and other upward trends. Also, the fact that policies are normally issued on a one-year renewable basis means that an insurer can lose good business or gain bad business very quickly if its rates become out of line with the rest of the market and if the tariffs do not reflect the real cost of claims that the risks will entail. It is, therefore, of vital importance that the insurers keep premium rates under constant review and be prepared to amend them as necessary.

In the majority of developing countries, motor third-party liability (MTPL) premiums are subject to government oversight typically through the

setting of maximum prices. The rationale behind statutory prices is, generally, a combination of arguments:

- The price of insurance, particularly if compulsory, is similar to the price of other essential goods (such as food and other basic items); it is, in other words, a sensitive part of the household's net expenditures that the government may wish to control.
- The insufficient development of a competitive market may create a large gap between the commercial premium and the pure premium. Statutory prices are a way to compensate for suboptimal competition.
- The solvency of companies, in case of major claims or a general deterioration of the results, has to be guaranteed by the state, which is therefore entitled to set prices as a counterpart of its implicit guarantee.

Given the weight of MTPL business in most developing countries (on average above 50 percent, but as high as 70–80 percent in the Balkans), ensuring the adequacy of premium rates means guaranteeing the solvency of the insurance industry in the long run.

The regulation of insurance prices can assume two major forms. A common approach is to regulate the size of changes in premium rates. Another is to restrict significantly the type of information that can be used to classify risk. The first form of regulation governs changes in the level of rates over time; the second affects the magnitude of differences in rates across buyers within a given time period. Economists generally agree that the case for requiring prior approval of changes in insurance rates is very weak. When a market is liberalized, new players can enter, which reduces the excessive profits that can be earned as a result of monopoly power. Because insurance markets are competitive, lowering overall rates through price regulation is ultimately self-defeating. Only competition among players will achieve sustainable lower prices, decreasing the core risk and the loadings on premiums. The history of insurance pricing in industrial countries indicates that liberalization is the only way to induce companies to lower the cost of insurance, although prices may rise initially in the years immediately following liberalization.

The United States has provided a real-world experiment in this regard, with almost universal price controls being introduced after the Great Depres-

sion and a gradual liberalization of this regime being implemented on a state-by-state basis since the 1980s. This experience has shown that the only way in which regulation can persistently lower rates without causing insurers to leave the market is by inducing them to restrict supply or to reduce quality in ways that lower the cost of providing coverage.

In many developing countries, the statutory prices on insurance have distorted the market, lowering both the profitability and the quality of services provided to customers. In one North African country, an average deficiency of 70 percent for MTPL tariffs led the government to raise premiums by 5 percent every six months from January 2008 to December 2009; nevertheless, the head of the country's National Insurance Council admits that this measure will be insufficient to bring the accounts to a technical equilibrium.

In addition to political economy influences, mandatory prices are usually below the (breakeven) pure premium for reasons related to regulation: (a) they are not updated regularly, (b) they do not take into account inflation, (c) it is technically very difficult for the government to set a fair price for MTPL, and (d) emerging countries usually experience an increasing rate of accidents.

Insurance companies try to offset this structural deficit by delaying the settlement process (following the idea that retaining the cash improves financial returns). There is a clear correlation between low statutory premiums and a slow claims settlement process. In return, the slow settlement process weakens the credibility of the entire insurance sector, producing a low penetration of noncompulsory insurance products such as life insurance (1.45 percent of GDP and premiums of \$40 per capita in emerging countries compared with between 5 and 10 percent of GDP and premiums of \$2,150 per capita in industrial countries).

Low premiums on MTPL business also convey a misleading signal as to the actual cost of the risks for drivers and, therefore, do not create incentives for prevention. They force insurers to cross-subsidize their MTPL deficit by applying higher premiums on other lines of insurance, which discourages consumers from subscribing to other policies.

Governments or insurance supervisory authorities should endeavor to set MTPL premiums close to the real cost and put in place a bold prevention policy aimed at the following:

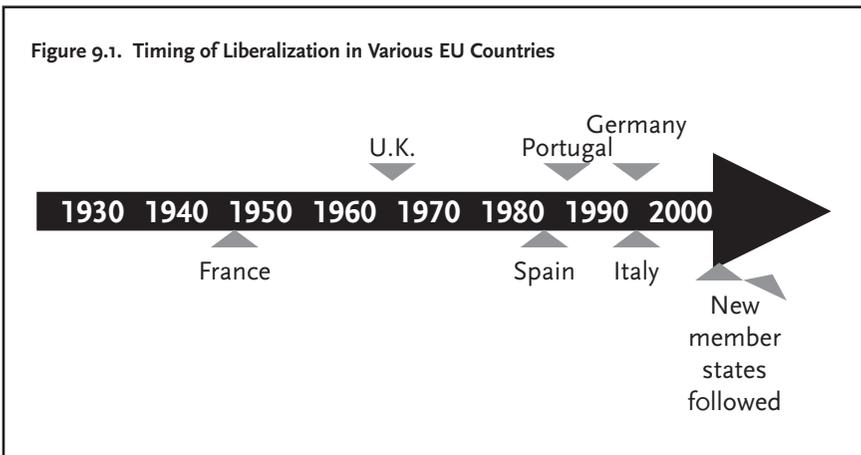
- Reducing the frequency of car accidents due to road safety issues
- Improving education in relation to transport risks
- Upgrading the driving test qualification process
- Reducing drinking and driving and other dangerous activities.

Investment in this arena repays in social savings many times over.

Motor Tariff Liberalization in Europe: A Brief Description

MTPL in the European Union (EU) has been deregulated fairly recently (mainly over the period 1968–94) and, for this reason, illustrates the steps that are necessary when introducing a free market in the insurance sector. The EU directive regarding the “freedom to provide services and right of establishment” (1988 and following modifications in 1990 and 1992) affirms the principle of freedom to set tariffs in all EU countries. Yet different countries have pursued liberalization at different times and in different ways (see figure 9.1).

In France, for instance, a very limited regime of control was in place for the approval of MTPL tariffs after the end of World War II. A pure regime of liberalized tariffs has been applied since 1986 (that is, many years before the official date for liberalization imposed by the European directive). In



Spain, the freedom to set prices in the insurance sector was established in August 1984 (again, many years before the official date for liberalization). In the United Kingdom, tariffs have not been subject to any type of control for several decades. In Germany, before 1994, tariffs were approved on the basis of the previous year's technical results of marginal companies, with the objective of avoiding their exit from the market. Complete liberalization was achieved, however, only in 1994.

Italy was the last major Western European country to move toward a liberalized regime following the EU directive in 1994. Before then, prices were administered by a ministerial committee, and the tariff structure was identical for all companies. The only differentiation between potential buyers was derived by the application of three rating factors: the power of the car's engine, the area of residence, and the application of a bonus-malus scale. The level of loadings on the pure premium that different companies could apply was limited according to the historical trends registered by each company regarding their total general expenses.

Motor Tariff Liberalization in Turkey: A Brief History

The development of MTPL insurance in Turkey is typical for a developing country. This section summarizes the path followed by the Turkish insurance industry over 55 years, from the setting of tariffs by the supervisor to the introduction of a more market-based approach in 2008.

Turkey's Motorways Traffic Law, dated May 11, 1953, required the owners of motor vehicles to acquire insurance to cover damages originating from their use of those vehicles. Under that law, referred to as Law no. 6085, motor insurance premium rates were determined by decrees put forward by the Council of the Ministers. In June 1985, a new law became effective, giving the responsibility for determining insurance tariffs to the insurance supervisory authority established by the federal government. Neither of these laws gave insurance companies any authority to determine rates.

A new law—the Implementation Principles of the Motorways Motor Vehicles Compulsory Financial Responsibility Tariff—was proposed by the Association of Insurance and Reinsurance Companies and adopted in 2007. Under that law, the Undersecretariat of the Treasury, a supervisory body, was

given authority to approve the schedule of rates proposed by the industry. Companies were allowed to develop their own tariffs within the margins of up to a 10 percent increase or a 5 percent decrease on the basis of approved prices. Once the tariffs were set, the companies were obliged to abide by them for a three-month period. This was deemed necessary in order to preserve discipline and consistency in the system.

The system of approved tariffs was viewed as a transitory period on the way to reaching a fully liberal tariff regime, and a date for final implementation was chosen based on the answers given to an industry survey. Since July 1, 2008, insurance companies have had the right to determine their own base premiums, and the supervisor has retained the right to review a company's tariffs and to require changes if the company's financial situation warrants it or if changes are needed to prevent price dumping. Companies are still obliged to keep their rating structures unchanged for at least three months.

While there were many reasons for the Turkish Treasury to adopt a liberal tariff regime, the main factor was the realization that the duty to set rates was incompatible with the duty to supervise. Under the new system, the supervisor can determine which companies have good claims management procedures and are setting premium rates in accordance with actuarial principles. It can also identify the companies that are mismanaged, undercapitalized, or indulging in poor market practices and take the required action.

Thus the role of the supervisor has changed over time. In the beginning, its main concern was to ensure that the public bought the compulsory insurance and that motorists were charged adequate, but not exorbitant, rates. As the market has matured, the focus has turned to ensuring capital adequacy and accumulating data that will be of service to the regulator, the industry, and the general public. The supervisor still oversees the companies' adherence to the semiannual guidelines for tariffs. Required corrections are requested from the companies on an individual basis, while communications regarding tariffs are made through TRAMER, a central database for MTPL insurance that is discussed in other sections of this book.

In the beginning, TRAMER only collected data for MTPL insurance. More recently, an umbrella organization has been created to collect information for all compulsory and voluntary types of insurance in the system, except private pensions, compulsory earthquake insurance, and the agriculture insurance pool. TRAMER data are available to the public. Consumers may use the

information to compare companies by looking at their claims service records and pricing. Injured parties can obtain information related to their claims and can communicate directly with companies. This access to information encourages transparency and discourages poor market practices.

Over the course of 55 years, Turkey's motor insurance system has changed from a state-determined system to an approved-tariff system and ultimately to a liberal tariff regime. The current practice in Turkey is essentially liberalization with supervision and regulation.

Best Practice in the Liberalization Process: An Action Map

The following issues need to be considered:

- *Time frame.* Define the time frame necessary to achieve a completely free market
- *Reaction of the different players.* Identify the reactions of the different players and the actions that need to be taken in order to prevent conflicts
- *Impact on prices.* Foresee the possible effect on prices and therefore on solvency
- *Effect on distribution.* Determine the impact on the channels of distribution and identify possible areas of competitiveness linked to direct sales.

Time Frame

Any liberalization process requires a relatively lengthy period of time to allow for discussions among the parties (government, insurance companies, insurance authority, and consumer associations, if they exist in the country) before arriving at a definitive decision. The following indicates the length of time required for Italy to abandon its statutory motor tariff: (a) the EU directive was introduced in 1988, (b) Italy began to discuss the liberalization of tariffs only in 1990, (c) in 1992, given the deadlines in the EU directive, the Italian government decided to proceed with liberalization, (d) in 1994,

a ministerial law abolished the administered tariffs as of July 1, and (e) in 1995, the insurance companies began to change their internal structure and approach to MTPL business.

Various lessons were learned from this process:

- The obligation to move toward a liberalized MTPL should be imposed by law.
- A sufficient period of time (up to five years or even more) must be allowed for discussion among the players (particularly the government and the insurance sector).
- Companies should be helped to structure their own database for analyzing the risks and for training the staff who will be making the calculations, because the process is relatively complicated.

Reaction of the Players

Different stakeholders have different, often conflicting, perspectives. These conflicts must be resolved in order to limit and prevent long-term problems; in many cases (particularly in the case of insurance companies and consumer associations, if applicable), it is difficult to gain a level of trust.

It is important for the government to ensure that the process will improve market competitiveness, which may imply a medium-term fall in prices unless initial prices were too low. All of this is achievable if buyers are allowed to switch easily from one provider to another, the time period for terminating a contract is shortened, and any form of bonus-malus scale, if present, is universally recognized.

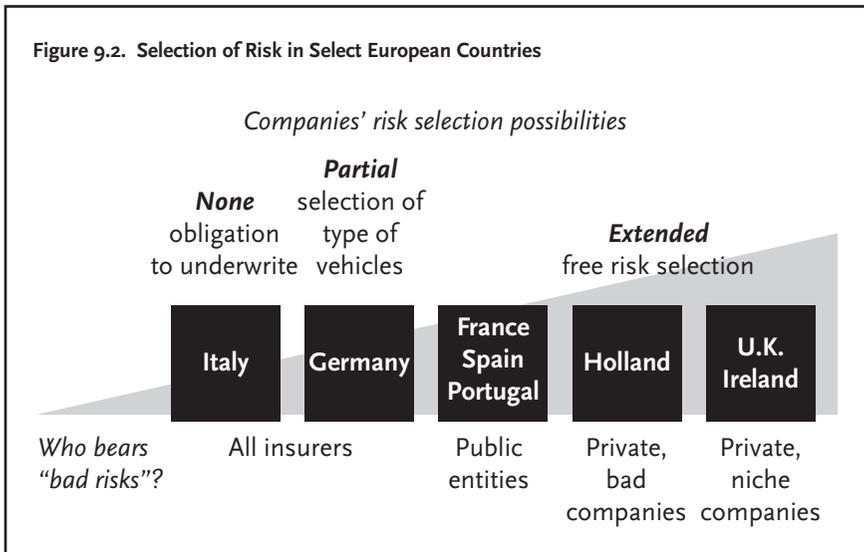
The implications are slightly more relevant for insurance companies. As a result of set tariffs, insurance companies are frequently obliged to apply tariffs below the real cost, with a need to cross-subsidize the MTPL deficit by charging higher premiums on other lines of business. Liberalization is seen as the only possible “medicine” for negative technical results and as one of several possible solutions to deal with the moral hazard and adverse selection arising from state-administered tariffs.

Moral hazard relates to the fact that, when insurance coverage is priced at an identical price regardless of the behavior of the policyholder and regard-

less of the classification of the risks covered (as is often the case with statutory tariffs), policyholders have no incentive to minimize the occurrence of losses. In a liberalized market, instead, a good risk classification generally helps to reduce the total cost of risk by providing insurance buyers with incentives to alter their behavior (for example, incentives to take precautions when engaging in risky activity or to increase the amount of insurance purchased).

Adverse selection refers to the existence of asymmetric information between the insurance companies and the policyholder that gives rise to the risk that the people who know more about their potential risk of having a claim will resort more frequently to insurance (or will look for wider coverage). A competitive market will enable companies to impose higher rates on buyers with higher expected claims costs. Insurers have strong incentives to classify buyers based on complete information that helps to predict differences in claims costs across buyers, provided that the information can be obtained at sufficiently low cost.

However, under a liberalized regime, some buyers (the so-called bad risks) may find that coverage is not affordable. In Europe, this situation has been handled in different ways in different countries (see figure 9.2). In Italy,



for instance, insurance companies are obliged to underwrite any potential buyer who is seeking coverage; in this case, the bad risks are spread among all insurers, and companies are unable to avoid taking on the risk if the customer agrees to the price quoted. In Germany, companies cannot refuse a particular risk, but they can offer the potential bad risks coverage with caps on reimbursement, in case of an accident, well below the full coverage offered in the rest of the market. In France, Portugal, and Spain, companies are not obliged to underwrite all types of risks, and the bad risks can buy coverage from public entities, generally at higher prices than ordinary policies. These public entities are financed pro rata by the entire insurance sector.

In Ireland, the Netherlands, and the United Kingdom, the situation is slightly different. In these countries, companies are not obliged to underwrite all risks, and the bad risks generally find coverage through private niche companies at a higher price and for a limited period of time. This means that the applied tariff for standard risks reflects only the costs of the risks that are insurable: the system, as a whole, does not need to bear the costs of the worst risks.

The insurance supervisory authority should be involved in the process from the beginning, particularly if the insurance sector is not represented by a lobby association. The role of the supervisor becomes even more important after the process has been completed, assuring long-term market stability and supervising the setting of tariffs. In some cases, companies may not understand their costs or the fair price of insurance. In this case, it is crucial for the supervisory authority to identify quickly which companies are pushing prices down and to ensure that companies set aside sufficient technical reserves and estimate their current profits and losses accurately. In Italy, for instance, the supervisory authority has convinced the government to appoint an actuary in charge of MTPL insurance. This person guarantees the appropriateness of the methodology used for calculations and interacts with the supervisory authority in explaining and justifying the rates applied.

Various lessons were learned from the liberalization process in Europe. The government usually takes the initiative in any effort to abandon a regime of state-ruled tariffs and then adopt a regime of free-market pricing. Crucial in the process is the ability of government to involve the insurance supervisory authority and the insurance sector (through the insurance association, if present) and to reach agreement on “how” and “when.” If insurance compa-

nies will not be obliged to underwrite all types of risks, a mechanism will be needed to ensure that coverage is offered to the worst risks.

For their part, insurance companies will bear the heaviest burden in the liberalization process. More specifically, insurance companies will need to do the following:

- *Improve the actuarial function within each enterprise.* This should be done from the very beginning. The move toward a liberalized market requires each company to have a department capable of analyzing the risks and devising a structure of premium rates. Setting premiums is a difficult process that requires a deep understanding of statistical actuarial techniques and the financial mechanisms linked to insurance activity. For each step, the actuarial department has to prepare a technical report regarding the criteria and the hypotheses used to calculate premium rates. This is essential in order to facilitate the functions of the insurance supervisor.
- *Set up new organizational structures.* New structures are needed to (a) bring appropriate knowledge to the company and (b) support a database for analyzing the frequency and average costs of claims by individual rating factors. This is essential, as the choice of a multivariate database, statistically representative of the company's claims experience, is of fundamental importance. If companies have not prepared an appropriate database at least two to three years in advance, they will not be able to set tariffs appropriately (thus incurring the risks of adverse selection and moral hazard). Organizational changes are also needed to monitor portfolio performance, create new products, operate with transparency, and invest in software and hardware.

For its part, the supervisory authority will become even more relevant after liberalization has taken place. The state will monitor the actuarial techniques applied and examine the soundness of the database used by the companies to calculate premium rates. In addition, the state will frequently assess the insurers' risks of insolvency and their level of assets and capital.

Impact on Prices

The history of insurance pricing in EU countries shows that premiums generally rise after liberalization, because having statutory rates implies, in most cases, a “political” approach to determining the theoretical costs of the insurance companies (see figure 9.3). In the long run, however, liberalization should lead to a progressive decline in the cost of insurance.

In Italy and other countries that applied a statutory tariff regime for many years, the insurance companies were underwriting risks at a price far below the minimum necessary. For this reason, the insurance sector lost a considerable amount of money following liberalization (from 1994 and 2002), and some companies went into liquidation. In Italy, only in 2002–03 did the sector begin to achieve better results, finally breaking even seven years after the liberalization took place.

As shown in figure 9.4, insurance rates rose after liberalization. Since 1994, the annual premium has been rising faster than inflation (a parameter often, but wrongly, used to judge how much the MTPL tariffs should increase). From 1994 to 2001, premiums and the cost of claims rose far faster

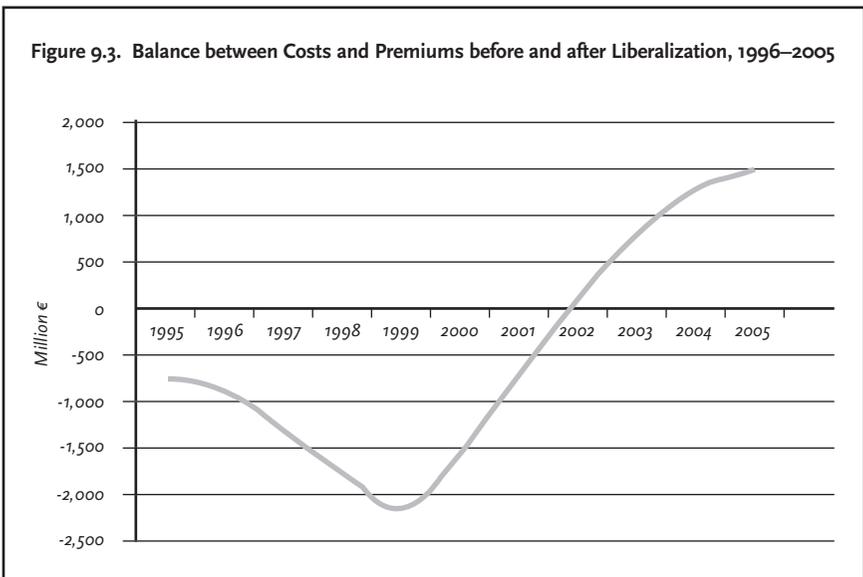
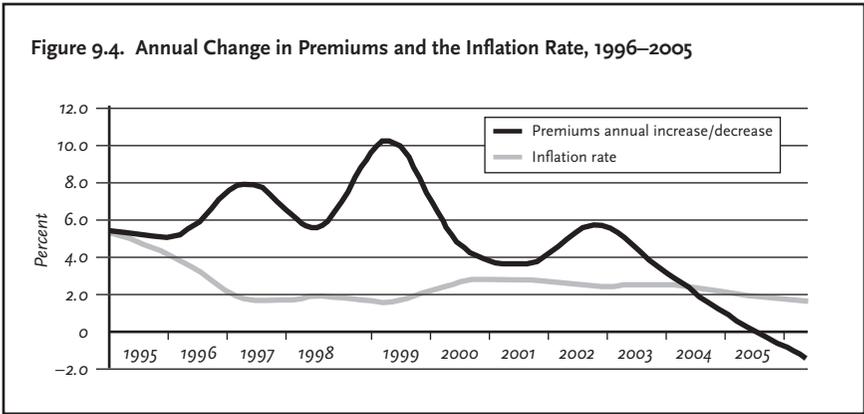


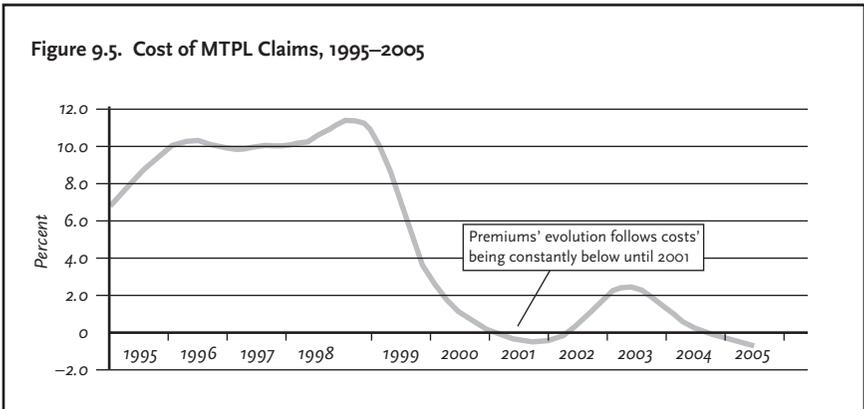
Figure 9.4. Annual Change in Premiums and the Inflation Rate, 1996–2005

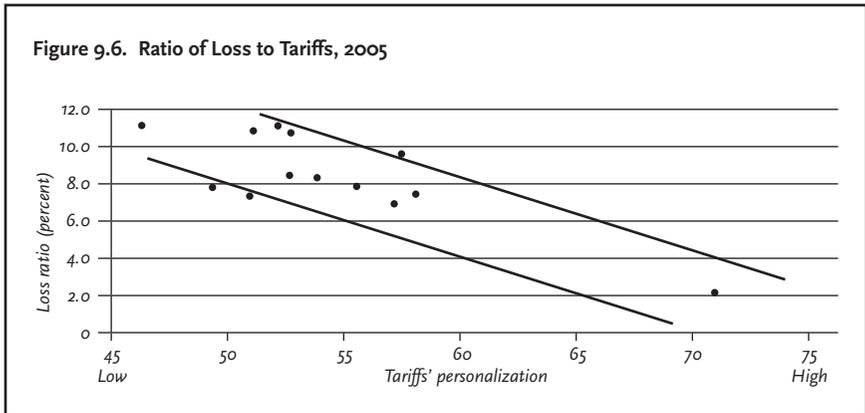


than inflation. In 2005, as results improved and the cost of claims declined, average premiums fell.

As a result of deregulation—at least in France and Italy—companies that have been able to tailor premium rates to the individual have enjoyed better profitability (which is equivalent to saying that they have had a lower loss ratio). A possible explanation for these results is that charging higher premiums to insurance buyers with higher expected claims costs often helps to reduce costs by providing higher-risk individuals with a greater incentive to minimize their risks (see figures 9.5 and 9.6). For example, when young males pay higher rates to reflect the greater likelihood that they will be in an

Figure 9.5. Cost of MTPL Claims, 1995–2005





accident, fewer young males may buy cars, and those that do might buy less expensive vehicles or might buy an insurance policy with a lower limit of coverage. Both responses reduce the cost of risk. Lowering their premiums below expected costs would weaken the incentive to reduce risk and thereby increase the cost of risk. In all countries where tariffs have been individualized, such personalization has been a key factor in differentiating one company from another. In general, the first movers have benefited from major advantages (as in most changing business environments).

If an insurance market moves toward liberalized tariffs, it is important to consider (in addition to the technical aspects already explained) the real mechanisms driving the creation of tariffs: economic cost and market dynamics.

Economic cost consists of evaluating the major component of the premium, which is the total cost of claims divided by the exposure (the so-called pure premiums). This is basically derived from the estimated probability of occurrence of a claim and the estimated statistical distribution of claims costs. These estimations are generally based on past claims, and, if the calculations are correct, the pure premiums should be sufficient to meet the expected costs of claims arising from the policies written under the new rates.

Market dynamics consist of evaluating classes of risks and applying them to individual buyers according to their risk profile. After establishing the average tariff premium (which is obtained from the pure premium plus all the loadings for expenses, profits, and other contingencies), it is important to establish how the average premium should be differentiated among the

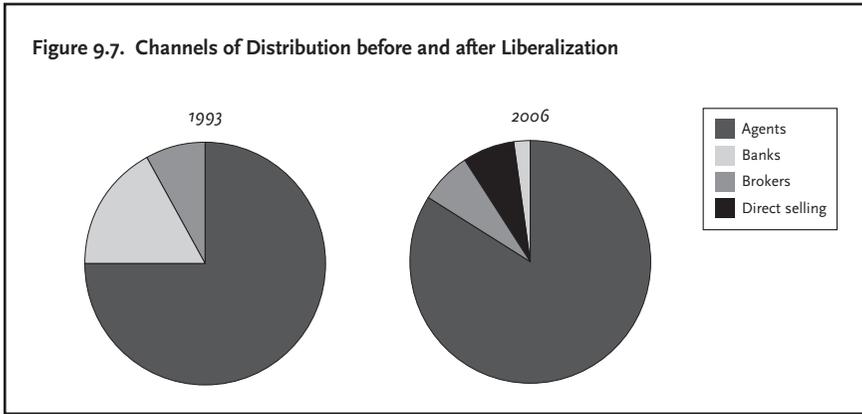
insured population. This is done by identifying classes of risks, in order to apply to each buyer the tariff that best resembles his or her real risk profile. In this way, the insurer can charge premium rates that are appropriate to the experience of each risk group and broadly equitable for the policyholders in different risk groups. In order to do so, appropriate rating factors should be used, such as the type of car used, residential area, age, gender, and profession of the driver, use of the vehicle, and so forth. However, two potential buyers of the same risk class can have a different propensity to cause accidents. In order to take this into account, many countries have introduced rating schemes that penalize policyholders who are responsible for one or more accidents by raising their premium through a “malus” mechanism and that reward policyholders who do not incur a claim by lowering their premium. In a free market, the insurance companies can also apply a personalized bonus-malus scheme, introducing more elements of personalization in order to select better customers and be more competitive.

Effect on Distribution

Liberalization does not always imply a change in the distribution channel. In Italy, for instance, this process has had a limited impact on how the business has continued to be sold (see figure 9.7). There has been a slight increase in the share of direct sales (telephone and Internet), but insurance agents are the main channel of distribution. The entrance of players who sell policies directly over the Internet or on the phone has not necessarily been a consequence of liberalization. Still, direct players have been able to exploit the advantages of liberalized tariffs, as evident in the following:

- Higher-risk segmentation and profiling
- More flexible and more dynamic approach to pricing
- Average prices lower by 20 percent or more compared to traditional companies.

The effect of liberalization on the channel of distribution will depend on the long-standing relationship between agents and customers. In other countries (such as Ireland and the United Kingdom, for instance), direct



players have grown rapidly, and some new companies have quickly become market leaders.

Summary

The trend shown in this chapter is of a steady movement away from centrally managed tariff-based pricing toward fully liberal markets. The full effects of the impact of free competition are discussed in the next chapter, but what emerges here is that in no case has the liberalization of MTPL pricing had an adverse effect on the wider economy. On the contrary, it has provided insurers with strong incentives to improve their efficiency, and it has delivered to the consumer a better understanding of the linkage between the consumer's behavior and the cost of insurance. In every example, the move toward liberalization has been beneficial.

CHAPTER 10

The Role of Competition in MTPL Insurance

Serap O. Gönülal

Across the world, motor third-party liability (MTPL) insurance is conducted in a variety of frameworks. These range from a monopoly insurer that sets standard prices to a relatively unconstrained and competitive free market. Between these extremes lies a range of interventionist and semi-interventionist arrangements. Regardless of the level of competition, MTPL pricing is heavily influenced by political economy issues, as this insurance is usually a material expense for the driver and vehicle owner:

- It suffers from inflationary pressures that are generally greater than normal inflation, so its cost in all countries tends to rise in real terms.
- For commercial vehicles, the high and rising cost of insurance is a key factor in the profitability (or otherwise) of the owner's business.
- In most developing countries, there is relatively little awareness of the causal link between bad driving standards and higher MTPL premiums.

- There is also an emotional issue: many drivers are reluctant to accept that their driving might be less than perfect, so a high TPL premium may meet with objections.

The Centrally Priced Option

Many countries have found MTPL an unpopular class with insurers. If the central pressures to hold pricing down gain the upper hand, the inevitable consequence is that there will be losses for insurers. In chapter 8 on the recent history of MTPL insurance in India, the discussion makes plain how hard the Indian regulator has found it to raise commercial vehicle insurance pricing to economically viable levels. This experience is common. Wherever MTPL pricing is fixed centrally, the pressures to keep pricing below economically viable levels tend to gain the upper hand.

This usually leads to an economically undesirable outcome.

- In a plural-insurer context, insurers with efficient systems and good management will avoid participating in a class where central pricing controls restrict the scope for profit. The tendency, therefore, is for insurers with weaker management to participate, and this in turn leads to solvency problems, pyramidal cash flow arrangements, and eventually some form of centrally financed bailout.
- In a monopoly-insurer context, the tendency is to drive prices down to a level where the insurer is starved of funds. Only when the insurance fund is reduced to impractical levels does some kind of adjustment become necessary, but by then the gap between current pricing and required pricing is so large that adjustment for the consumer is often painful.

South Africa has found a successful solution: a centrally fixed insurance price that is not subject to massive political pressures. In South Africa, the principal MTPL insurance fund levy is collected at the petrol pump. A portion of the tax levy that is collected by the government from all road users is channeled to the government's road accident injury compensation fund. This approach gives rise to a surprisingly attractive outcome:

- The more petrol you buy, the more you pay toward the nation's MTPL insurance costs; this has a common-sense user-pays fairness.
- The more petrol inefficient your vehicle is, the more you contribute to the insurance fund; thus the levy has an element of being a "green tax."
- The cost of the insurance is a very small portion of the cost of petrol at the pump; for this reason, changes in the insurance levy become a much diminished political issue.
- The cost of collecting the levy is very low indeed, one of the cheapest premium collection arrangements in the world.
- The uninsured driver does not exist; every driver needs petrol and therefore pays a premium.
- The foreign vehicles visiting South Africa find that they too contribute to the levy.

The Free-Market-Priced Option

The free-market-priced option has many good qualities, but it is not a panacea. It is best to contrast some leading advantages with some key disadvantages.

Where the Free Market Succeeds

The free market has a number of undeniable theoretical advantages:

- *Homogeneous risk underwriting.* MTPL is a class where very large numbers of risks are broadly homogeneous in character. Given current actuarial technology and adequate databases, the free market should be efficient at pricing risk and marketing accordingly.
- *Administrative efficiencies.* The existence of a large-volume pool of risk with substantial segments of high-quality risk provides incentive to insurers to develop all types of administrative efficiencies. The development first of the use of the telephone as a sales tool and then of the Internet has created a quantum leap in efficiencies for society in keeping down the cost of MTPL insurance.

- *Claims efficiencies.* The profit motive has given free-market insurers very strong incentives to improve claims management. Many state-sponsored systems have suffered from weak claims management. The South African system is a good example, where in the 1970s and 1980s the private insurers (which had been tasked with administering the claims for the central system) gradually found that the most profitable way of handling a claim was to pay it quickly regardless of the cost. This gave rise to explosive claims inflation that, in practice, wrecked the system. In response, the authorities were forced to redesign the whole system of compensation.
- *Regulatory efficiencies.* The stronger the leading insurers in a free MTPL market become, the more their behavior fits a standardized pattern. In general terms, they become easier to regulate. The biggest auto insurers in many markets are often the best-run insurers. There are exceptions (mainly in less well-developed countries), but the trend in most countries over time leads toward motor insurance becoming a less important class for regulators.
- *Consumer responsibility.* This last point is often omitted from discussions, but in fact it is of very deep importance, particularly for developing countries. Where there is a state provider, the common consumer response is to imagine that responsibility has been assumed by the state and that no further effort is required on their part. This type of attitude causes many deep problems and much waste. Where the free market imports open (or semi-open) pricing features to MTPL, the impact on consumers' sense of responsibility is of vital importance in upgrading consumer behavior. From the day that the consumer appreciates that his or her own motor premium is a function of his or her own driving behavior, a dynamic link is established between the cost of motor premiums and improved road behavior.

Issues with “Severity Risks”

At the other extreme, the free-market approach can sometimes give rise to unacceptable outcomes. Various types of drivers can become identified as

giving rise to severe claims experience. It is worth listing some examples of severity risks:

- Males under 25 years old
- Taxi vehicles
- High-engine-capacity vehicles
- High-engine-capacity motorcycles
- Vehicles used for professional purposes (especially motor trade and delivery vans)
- Long-distance haulage
- Buses and coaches
- Specialist vehicles such as police, fire, and ambulance.

If the regulator permits the full force of free-market pricing to determine insurance costs, the smarter insurers will focus on the better-quality risks. This generates effective competition, and market forces will ensure cheaper premiums for the better risks. Conversely, there is usually a scarcity of capacity for the high-risk types of vehicles. This leads to heavy price escalation for the “severity risks” and can be accompanied by unpleasant political economy externalities, including forced cross-subsidies. Undesirable market practices can also emerge. For example, if taxi drivers find it almost impossible to find an insurer, they often end up using an agent. The agent with control of a rare capacity supply is in a position to levy excessive commissions; market inefficiencies ensue. Taxi cooperatives also sometimes form small mutual insurers that are not always run by people with sufficient insurance experience.

The second chapter of this book, on MTPL in Brazil, also provides an interesting example of how problems of this type are addressed. The Brazilian experience of buses and minibuses was sufficiently adverse that these categories were segregated from all other MTPL insurance into a distinct consortium. The non-bus consortium carries a 0.5 percent brokerage levy; the bus and minibus consortium carries an 8 percent brokerage levy. This is in contrast to the Indian position, where K. N. Bhandari writes, “Since MTPL is compulsory for all vehicles, no procurement intermediation cost is payable.” Of course, there is a place for a good-quality adviser to add value in the placement of insurance, whether for a compulsory insurance risk or for a voluntary one, but a free market in such matters is generally desirable.

Competition in the Claims Context

The difficulties that the South Africans encountered when the dynamics of their claims management structure evolved have been mentioned above. Three further instructive examples can be found from the historical experience of claims management in Australia, Canada, and Ireland.

In 1987 the state of New South Wales found its previous state-run monopoly system had reached a nadir of poor operational outcomes. The authorities consulted with a range of parties including insurers in the private sector and, after extensive debate, settled on a new framework where initially only 13 insurers would be licensed to write motor injury third-party liability. One leading insurer proceeded to set up a claims department with four separate teams, with claims being handed in sequence to each of the four teams. By means of competition between the teams, the performance of one team could be measured against the performance of the others, as to average claim cost, average time delay, and so on. They found, understandably, that for the most complex claims, there was insufficient expertise to spread their claims-operational skills around four separate teams, so they formed a fifth unit as a center of excellence in charge of managing the most complex claims. The experience of New South Wales shows that competition can successfully be brought to bear even in the field of claims management.

Our next example comes from the province of Ontario in Canada. After several efforts to streamline and redesign an MTPL scheme in the 1980s, the provincial government reached the conclusion in June 1990 that most motor injury claims (other than the most severe types of claims) should be denied access to the tort legal system for the purposes of reaching compensation. This legislation, the Ontario Motorists' Protection Plan, was seriously disruptive at the time, moving some 92 percent of motor injury cases out of the scope of the traditional lawyer-based resolution process. But it has lasted many years longer than its three predecessors, and equally successful "no-fault" systems have been installed in several other jurisdictions.

Our last example, in Ireland, is more recent. Again, the Irish authorities found that the claims process had not been functioning to optimal levels of efficiency. The Personal Injuries Assessment Board (PIAB) Act of 2003 brought into being a new authority (the PIAB) charged with the resolution of quantum (not liability), initially just in actions against employers. Since

2005, the PIAB has had responsibility for all nonmedical personal injury cases in Ireland. In the years following the establishment of PIAB, motor premiums in Ireland fell sharply, and the adjustment has been hailed as due more to the success of the PIAB than to any market-cyclical variation. Here we see another example of system review and redesign working to the benefit of the community.

Where Competition Fails to Encourage Improvements Directly

Competition is not the solution to every problem. In some areas, the introduction of competition does not lead naturally to market-driven benefits. The most obvious of these are situations in which the collective community stands to benefit from an investment in which the effects go beyond an individual insurer.

- Road design safety is a prime example. In some countries, the police collect statistics regarding accidents that keep occurring at particular road junctions. It is not realistic to expect one insurer in a competitive market to invest in paying for improvements at that junction; the insurer might save on its claims costs, but it will not want to spend that money because of the fear that such action will benefit a competitor.
- Child education is a second key example. Teaching road safety, the use of seatbelts, and the dangers of drunk driving at schools undeniably brings community benefits. But again it is almost impossible to convince a competitive insurer to finance work like this; the insurer will keenly support initiatives that give competitive advantage just to its own position, but the nature of competition discourages it from supporting this type of general community investment.
- Administration of justice reform is a third example. In many countries, this is a major problem. It runs through both developed and developing countries. Again, insurers individually are not likely to spend time or money pursuing reform, however badly it is needed.

Insurers will always look hard at options that improve their own position. For example, where one insurer finds a more efficient way to rehabilitate an injured claimant, it will encourage that process as a means of gaining a competitive advantage.

The more general community situations are best encouraged through a central body. Road design safety is best promoted through the country's highway authority, child education obviously should go through the usual education authorities, and law reform should be addressed at the highest political levels.

Nevertheless, the insurers should contribute their intelligent opinions to these processes. Often it will cost a good insurer almost nothing to give its opinion and encouragement to the relevant authority. There is ample evidence of the benefits of incorporating road safety issues into the general education curriculum. Some police forces will visit schools to contribute to this effort. There is also massive evidence to show the value of investments in improving road design safety, both on existing roads and when building new roads. Insurers often understand these issues very clearly. Without doubt, there is scope for them to make a real contribution to the community, without spending their own money, by helping with cost-benefit analyses regarding death and injury risks and by lobbying for improvements that the central highway authority will want to implement. They can do this individually or through market associations.

Summary

There is no simple solution to any of these matters. Every country is unique, and each needs to find its own optimal answer. Nothing can be centrally prescribed. However, the examples given in this chapter suggest that, as time passes, competition of one kind or another has brought about reforms for the wider benefit of the community. Some state-run systems have operated with striking levels of success, but, on the whole, they are in the minority.

CHAPTER 11

Motor Third-Party Liability Insurance in Europe

Don McIsaac

In all the countries of the European Union (EU) and in virtually all the countries of the European Economic Area (EEA), motor third-party liability (MTPL) insurance is obligatory for all operators of motor vehicles. The European Insurance and Reinsurance Federation (CEA) reports that more than 300 million vehicles are operating in European countries. This is almost as great a concentration as exists in Canada and the United States. Insurance of motor vehicles forms a major part (33.5 percent) of the total volume of premiums collected by non-life insurance companies operating in Europe. Total motor insurance premiums collected by insurance companies operating in the countries of Europe and the EEA were estimated to be €127.2 billion in 2006, of which 60 percent was paid for third-party liability coverage and the remainder for own damage or “casco” coverage.

Thanks to the efforts of the EU Commission and the governments of member states, there is a considerable degree of uniformity in the practices and requirements applying to all European countries. However, some differences do persist from country to country. This chapter discusses the current state of MTPL insurance in Europe.

Background

The EU Commission and its predecessor organizations had several fundamental objectives. Two of the top priorities were (a) to create an open market among member states and (b) to ensure freedom of movement across national boundaries.

Before the creation of the Common Market, border crossings were lengthy and tedious, with document checks being required as a motorist passed from country to country. Among other things, border officials were required to ascertain that a motorist entering country B from country A could produce evidence of acceptable third-party liability insurance. That is to say, the motorist had to show that any personal injuries suffered by a third party as a result of the actions of that motorist while visiting country B would be compensated. While such coverage was routinely available, it was neither automatic nor obligatory. Thus in order to create freedom of movement across national boundaries, it was necessary to establish a system whereby MTPL insurance coverage was extended automatically to cover the activities of motorists from member states, both at home and in any other member state.

The Council of the European Communities has, to date, issued five motor insurance directives. The first motor insurance directive (Directive no. 72/166/EEC) appeared in 1972. That was followed by the second directive in 1984 (Directive no. 84/5/EEC), the third in 1990 (Directive no. 90/232/EEC),

Table 11.1. EU Directives

<i>Directive</i>	<i>Provisions</i>
First Council Directive 72/166/EEC	<ul style="list-style-type: none"> • Eliminates border checks on vehicles traveling between member states • Ensures that all registered vehicles are covered by insurance and that this insurance covers loss or injury to a third party as a result of an accident caused by the operator of the registered vehicle • Requires each state to establish a national insurance bureau and requires national insurance bureaus to communicate with one another • Builds on the green card system
Second Council Directive 84/5/EEC	<ul style="list-style-type: none"> • Requires coverage to include property damage and personal injury • Specifies minimum amounts of coverage for both bodily injury and property damage; allows states to set higher minimums • Requires each state to establish a system for compensation when accidents involve unidentified vehicles or when a legitimate claim is unsatisfied for other reasons

(continued)

Table 11.1. EU Directives *(continued)*

<i>Directive</i>	<i>Provisions</i>
Third Council Directive 90/232/EEC	<ul style="list-style-type: none"> • Directs MTPL policies to cover, on the basis of a single premium, the registered vehicle throughout all states of the entire community • Establishes the amount of coverage that is required by the member state where an accident occurred or that is specified for the state where the vehicle is normally housed, if that is higher • Frees the victim from having to establish that the guilty person is unable or refuses to pay • Has either the insurer or the state guarantee fund compensate the victim and subsequently settle the account between themselves
Fourth Motor Insurance Directive 2000/26/EC	<ul style="list-style-type: none"> • Gives injured parties the right to take legal action directly against the insurer of the driver or vehicle at fault in an accident • Obliges every insurer to appoint a claims representative in each EEA state • Enables a claimant to file a claim in his own language, in his own country, no matter where the accident occurred
Fifth Motor Insurance Directive 2005/14/EC	<ul style="list-style-type: none"> • Compensates victims where vehicles have false or no registration plates; if no insurer can be identified, the guarantee fund will pay the claim • Raises the minimum legal cover for personal injury and property damage • Provides compensation for property damage caused by an unidentified vehicle where the accident also involves "significant personal injury" • Expands coverage to include liability for loss or injury to pedestrians and cyclists as a result of a vehicle accident, provided it can be established that the operator of the vehicle was liable • Gives policyholders the right to request insurers to provide a statement of claims history when coverage is moving from one company to another

the fourth in 2000 (Directive no. 2000/261/EC), and the fifth, and most recent, in 2005 (Directive no. 2005/14/EC). The provisions of these directives are summarized in table 11.1.

Green Card System

In 1949, long before the formation of the European Union, the Inland Transport Committee of the United Nations Economic Commission for Europe developed the so-called green card system for purchasers of motor vehicle insurance. The system was designed to simplify the passage of vehicles from country to country within Europe. The committee recommended the adoption of a Scandinavian model that had been in effect since 1926.

Under the concept, central insurance organizations of countries with compulsory motor liability insurance would introduce a certificate guaranteeing liability insurance. The program further required national organizations to conclude an agreement with each other enabling them to settle among themselves claims arising from losses caused by foreigners, rather than involve the foreign insurance companies directly. An individual arranging MTPL insurance in his own country could request an international certificate of insurance, known as a green card. This card signified that the insurance company would honor claims from third parties in other countries for loss or damage caused by the actions of the operator of that vehicle. In the initial phase, the operator of a vehicle who attempted to cross a national boundary without a green card was required to purchase a "certificate of frontier insurance," which may or may not have been available at border checkpoints.

The green card is equivalent to the national motor insurance certificates of all the countries that a motorist visits. The card serves as an easily recognizable proof of third-party insurance that can be presented in the event of an accident when traveling outside one's own country. The green card itself offers no insurance cover. Rather, it serves as proof that the minimum legal requirements for third-party liability insurance as prescribed for any of the countries visited are covered by the insured's own motor policy. Because all EU countries, and other participating countries, comply with the first directive on motor insurance, a driver whose vehicle is registered in one of the participating countries and who crosses the border of another participating country is not required by law to possess the green card. For such drivers, the national vehicle registration plates are sufficient evidence that third-party liability is insured. However, motorists are advised to carry the green card when they travel abroad.

The green card system operates in more than 40 countries, including virtually all the countries of Europe and several Middle Eastern countries. It has been instituted in many countries of Europe that were not originally part of the EEC and in some that are still not part of the EU. For example, Turkey has participated in the green card system for many years. Russia has recently instituted the green card system for the benefit of Russians traveling in Europe and for residents of other countries seeking to travel in Russia.

In the event of an accident abroad, the motorist should immediately contact his or her insurance company or the company's representative in

the country where the accident occurred. If the accident was caused by an uninsured or unidentifiable vehicle, the victim is entitled to compensation from the motor vehicle guarantee fund of the country in which the accident occurred. In most cases, the claims of any third-party victims of an accident will be settled by the national insurance bureau (NIB) in the country where the accident occurred; the NIB of that country will then recover the amount paid out in claims from the foreign insurance company that insured the motorist responsible for the accident, either directly or through the intermediation of the NIB in the driver's home country. To enable the green card system to function, NIBs were established in each participating country. Their functions and their funding structure are discussed below.

Similar reciprocal agreements exist in other parts of the world. Several African countries have developed a "yellow card" system that operates in much the same manner as the European green card system. Drivers holding the card can travel in a second country that participates in the plan, knowing that they are insured against liability claims of third parties that might arise from an accident in the second country. Similarly, motorists in Canada and the United States can travel freely between the two countries, since MTPL coverage purchased from an insurance company in their country of residence is also valid in the other country.

National Insurance Bureaus

The national insurance bureaus were first established along with the green card system. NIBs provide the means through which an injured party can make a claim against an insurance policy issued in another country. In practice, the bureaus provide three main types of services. They are a means for the exchange of information between countries, they facilitate the exchange of payments between insurance companies and the victims of accidents, and they handle the compensation of victims when the identity of the driver is unknown (hit-and-run accidents) or the offending driver is uninsured.

Information Exchange

When accidents involving a nonresident vehicle occur, the NIB determines the country of origin of the vehicle and the provisions of the driver's insurance coverage. It communicates the details of the accident to the driver's insurance company and subsequently facilitates the flow of claims payments to the victims.

Compensation of Victims

When an accident is caused by a vehicle normally resident in another state, the NIB guarantees the settlement of any third-party claim in accordance with the provisions of its own law on compulsory insurance, whether or not the vehicle is insured. The EU directives have been written to ensure that the interests of injured parties are the top priority. For example, when there is uncertainty regarding whether a claim must be paid by an insurance company or by the national insurance bureau, the directives require that the victim be compensated forthwith, leaving the insurance company and the NIB to sort out the liability between themselves. The victim must not be made to wait for resolution of that dispute.

A victim may submit a claim for compensation directly to the driver's insurance company. To make this possible, each insurance company offering MTPL insurance in a member state of the EU must appoint a legal representative in every other state. For example, a British insurance company must name a legal representative in Germany, Latvia, Poland, and so forth, even though it does not issue policies in those countries. To continue the example, if a vehicle registered and insured in England is involved in an accident in Poland, a victim of that accident who is a resident of Poland has the right to file a claim, in Poland and in the Polish language, against the English insurance policy.

In the event that the person responsible for the accident cannot be identified, the NIB is still expected to provide compensation to third-party victims, up to the limits of insurance coverage for vehicles operating in that country. The same requirement applies when the operator has no insurance or when it is shown that the vehicle was stolen prior to the accident. In those cases where the guilty driver is untraceable and there is no witness to the accident,

steps are taken to protect insurance companies and the national insurance bureaus against the risk of fraudulent claims.

Guarantee Funds

In order to ensure that they can always compensate accident victims, NIBs in all European countries have established guarantee funds. These funds regularly receive a portion of each premium paid for MTPL insurance in the country. The funds are placed in trust, to be used exclusively for the purpose of compensating accident victims. In some countries, the guarantee funds are independent. In others, they are managed by the NIB.

The EU directives have specified rules governing the compensation of accident victims in cases involving unidentified drivers, unlicensed drivers, or stolen vehicles. In some countries, such as Turkey, the fund also stands ready to provide compensation for accident victims in the unusual event that the insurance company that would normally be expected to pay the compensation is found to be bankrupt and thus unable to meet claims.

As Eastern European countries have gained member status in the European Union, they have been obliged to establish national insurance bureaus and guarantee funds so as to become full participants in the EU's system. In the majority of cases, such institutions did not exist in those countries prior to accession. This has not always been an easy transition. In particular, new NIBs did not find it easy to put themselves in the position of carrying the credit risk that one of their own national insurers will fail to meet its liabilities for a claim. They also found it difficult to satisfy the requirement to take out excess-of-loss reinsurance in relation to their external exposures. Nevertheless, with some patience and flexibility on both sides, these entities have helped to move forward inter-European solutions to the green card risk posed by the new members of the European Community.

Vehicle Registries

The fourth EU directive requires each NIB to establish a vehicle registry. The registry records each vehicle's serial number, along with the information nec-

essary to identify the insurance policy that covers the vehicle. This registry helps law enforcement officials and the insurance industry to reduce the proportion of uninsured, or inadequately insured, drivers on the highways.

Directives Issued by the European Commission

Since 1972, the European Commission has issued five motor insurance directives. Over time, and with experience, the provisions of the directives have been strengthened and expanded. EU directives build on the private sector network of bureaus and the green card system set up by insurers. The following is a brief summary of the contents of the various directives.

Key Provisions of the First Directive

The first motor insurance directive is the first step toward the harmonization of motor third-party liability insurance rules at the EU level. The key provisions of the first directive are as follows:

- Each member state shall ensure that all vehicles normally based in its territory are covered by liability insurance.
- Insurance should cover the vehicle when it is operated in other member states and should meet the requirements of the laws of those other member states.
- The national insurance bureau of each member state shall agree to settle claims within its territory that are caused by vehicles normally based in another state, whether or not the vehicle is insured.
- National bureaus shall issue “green cards” or international certificates of insurance.
- A system of communication shall be established between the national insurance bureaus of the member states.
- Once these agreements are in place, checks on MTPL insurance will not be required for vehicles based in another member state. Such checks on vehicles based in the territory of a third country entering the territory of a member state from the territory of another member

state will not be required either. However, member states may carry out random checks.

- Before entering a member state, vehicles normally based in a non-member state must obtain either a valid green card or a certificate of frontier insurance establishing that the vehicle has adequate insurance.
- National insurance bureaus must deal with claims arising from the actions of uninsured drivers and unknown drivers. To cover these costs, the NIBs must collect a portion of all premiums paid by all policyholders based in their national territory.

These first requirements deal only with insurance to compensate third parties for personal injury. The first directive does not specify minimum amounts of liability cover that each state should require.

The provisions of the first directive were quickly adopted by the member states. The four additional motor insurance directives, issued in 1984, 1990, 2000, and 2005, have altered the terms of coverage and provided more guidance to the NIBs on the exchange of information and the means of settling claims in exceptional cases.

Coverage Requirements Specified by Subsequent Directives

The second directive, issued in 1984, specifies that the required coverage must provide compensation to victims for losses related to property damage as well as for personal injury, and it specifies the minimum coverage required in both instances. All states surveyed by CEA include this coverage in their policies. The second directive also requires member states to establish a system of compensation for accidents involving unidentified vehicles or in cases where a legitimate claim is not satisfied for other reasons.

Liability policies of every type specify maximum amounts of indemnity that will be paid by an insurer in response to a claim. Under the original green card system and continuing with the first EU motor insurance directive, each member state is free to set its own legal limits on minimum amounts of compensation for accident victims.

Table 11.2. Minimum Sums Insured in Accordance with the Second and Fifth Motor Insurance Directives

<i>Type of injury or damage</i>	<i>Minimum amount of insurance coverage</i>
<i>Second directive, 1984</i>	
Personal injury per person	350,000 ECU ^a
Property damage	100,000 ECU ^b
<i>Fifth directive, 2005</i>	
Personal injury	
Per person	€1 million
Per accident	€5 million
Property damage	€1 million ^c

Note: According to the second directive, member states may, in place of these minimum amounts, provide for a minimum amount of 500,000 ECU for personal injury where more than one victim is involved in a single claim or, in the case of personal injury and damage to property, a minimum overall amount of 600,000 ECU per claim. ECU = European currency unit.

a. When there is more than one victim in a single claim, this amount is multiplied by the number of victims.

b. Whatever the number of victims.

c. Per claim, whatever the number of victims.

Each country continues to set its own limits of coverage. However, beginning with the second directive, and with subsequent amendments in other directives from the EU Commission, the minimum limits have been gradually raised. Member states may lay down higher limits than those set forth by the European Commission, but they may not set lower limits. Table 11.2 indicates the minimum limits as specified in the EU directives of 1984 and 2005.

The third directive (1990) states that, when a vehicle normally based in one member state is responsible for an accident in another member state, the limit on compensation available to the victim is the amount specified in the insurance policy covering the vehicle or the minimum amount specified in the laws of the country where the accident occurred, whichever is higher. Under the third directive, victims no longer have to establish that the guilty person is unable or unwilling to pay. Victims are to be compensated first, and the issue of liability is to be resolved by the insurers and the NIBs.

The fourth directive (2000) gives injured victims the right to bypass the driver and to bring legal action directly against the company that insured the vehicle. It also obliges insurers to appoint a claims representative in every member state. The directive also establishes a mechanism for settling claims quickly when the accident takes place outside the victim's member state of residence.

The most recent directive (2005) modernizes the previous motor insurance directives and improves the protection of victims. It also allows for the

payment of damages to pedestrians and cyclists in cases where the registration plates of the vehicle are missing or fraudulent and for property damage when there is “significant personal injury.” Under the provisions of the fifth directive, policyholders can request a statement of claims history when they move from one company to another.

Steps Taken to Facilitate Victims’ Access to Compensation

As with other types of liability insurance, accident victims were, in the past, expected to launch legal action against the driver who was responsible for the accident in order to obtain compensation for damages. As the EU directives

Table 11.3. Minimum Amount of Insurance Coverage in Select Countries, 2009

<i>Bureau code</i>	<i>Personal injury</i>		<i>Property damage</i>	
	<i>Per person</i>	<i>Per accident</i>	<i>Per person</i>	<i>Per accident</i>
Austria	n.a.	€5 million	n.a.	€1 million
Belgium	n.a.	Unlimited	n.a.	€100 million
Bulgaria	€358,000	€512,000	n.a.	€102,000
Czech Republic	€1,319,000	n.a.	n.a.	€1,319,000
Denmark	n.a.	n.a.	n.a.	€2,550,000
Estonia	€351,000	€12,890,000	€102,000	n.a.
France	n.a.	Unlimited	n.a.	€1 million
Finland	n.a.	Unlimited	n.a.	€3.3 million
Greece	n.a.	€500,000	n.a.	€100,000
Hungary	n.a.	€5,636,000	n.a.	€1,879,000
Italy	n.a.	€774,685	n.a.	€774,685
Ireland	n.a.	Unlimited	n.a.	€1 million
Norway	n.a.	Unlimited	n.a.	€1,235,000
Netherlands	Refer to the compendium	€5 million	n.a.	€1 million
Poland	n.a.	€1.5 million	n.a.	€300,000
Romania	n.a.	€1.5 million	n.a.	€300,000
Slovakia		€2.5 million	n.a.	€500,000
Slovenia	n.a.	€3.7 million	n.a.	€750,000
United Kingdom	n.a.	Unlimited	n.a.	€1,027,000

Source: As reported by the Council of Bureaus on January 21, 2009.
n.a. Not applicable.

on the topic have matured, efforts have been made to streamline the victims' access to claims payments.

In its report dated January 2009, the Council of Bureaus summarizes the status of MTPL insurance across Europe. The minimum amounts of cover vary greatly. Consider the examples in table 11.3.

Previously several countries had indicated that the cover on personal injury claims should be unlimited. This approach has been dropped, with virtually all countries now stipulating a currency minimum. As noted, the EU-specified minimum is €1 million.

Tariff Systems

MTPL insurance is compulsory in all member states of the EU and in virtually all countries of Europe. Governments have recognized that it is in the public interest to ensure that victims injured in motor vehicle accidents are compensated for any loss or damage that they suffer. In many countries it has become common for governments to establish a schedule of tariffs: prices that companies must charge for the insurance. The rationale is that, provided the rates are maintained at an adequate level, insurance companies will always have sufficient funds to pay all legitimate claims that are presented. However, the motor insurance business is very competitive, and companies began to use discounts and other incentives to attract buyers, thus pushing the actual prices below the specified tariffs.

Most countries have abandoned the use of a specified tariff, although some governments do set out a recommended set of prices. In the European Union, the last tightly controlled markets were liberalized in 1990 with the adoption of the third non-life insurance directive, allowing companies more freedom to set tariffs and conditions in these markets. Table 11.4 indicates the practice for price approvals in select countries. Of the countries listed, only two—Slovakia and Turkey—apply a system of uniform tariffs across the industry. In Turkey, the tariff for obligatory third-party liability motor insurance was abolished by means of a regulation issued in May 2008; as of July 1, 2008, insurance companies are free to fix their own rates within the parameters established by the legislation. Control of the obligatory limits remains in the hands of the Treasury.

Table 11.4. Practice for Price Approvals in Select European Countries

<i>Country</i>	<i>Is tariff approval required?</i>	<i>Must rates be submitted?</i>	<i>Percentage of uninsured drivers</i>
Austria	No	No	0.5
Belgium	No	Yes	1
Bulgaria	No	Yes	40
Croatia	Yes	No	3
Czech Republic	Yes	No	
Denmark	No	No	<1
Estonia	Yes	Yes	
Finland	No	No	0.01
France	No	No	<0.05
Germany	No	Yes	0.5
Greece	No	No	3
Hungary	No		3
Ireland	No	No	10–13
Italy	No	No	0.5
Netherlands	No	No	1.8
Norway	No	No	3.5
Poland	No	No	1.5–2
Slovakia	Yes ^a		
Slovenia	No		
Spain	No	Yes	4.5
Sweden	No		1
Switzerland	No	No	0.1
Turkey	Yes		>40
United Kingdom	No	No	5

Source: Munich Reinsurance K Forum, 2002.

a. Minimum rates

Decline of State-Run Monopolies

In Central and Eastern Europe, under the previous socialist system, motor insurance was provided by state-run companies that held monopolies. As markets have been liberalized and new companies have entered, there is more competition in the insurance industry. In these countries, one of the challenges companies face is the shortage, or complete absence, of sufficient reliable data on which to base prices.

Uninsured Drivers

Despite the fact that MTPL insurance is compulsory in virtually all countries, the presence of uninsured drivers is still a problem everywhere. As the figures in table 11.4 indicate, the problem of uninsured drivers is greater in the newly independent countries of Eastern Europe, no doubt due to the residents' unfamiliarity with and limited interest in insurance of all types. This environment is slowly changing.

In most countries, police forces assist in the attempt to ensure that all drivers possess valid insurance for their vehicles. However, police require access to information. In the United Kingdom, where an estimated one in 20 drivers is uninsured, the U.K. insurance industry has developed the Motor Insurance Database (MID). The MID records all vehicle identification numbers and the details of the motor insurance policies relating to those vehicles. The police can now access the MID either from the roadside, using hand-held computers, or from police stations, enabling them to check almost immediately whether or not a driver is insured. A development from this capability is the strong action taken by U.K. police, using some 40 million calls to the MID database during 2007, to confiscate and either sell or crush vehicles without insurance. This capability resulted in 150,000 uninsured vehicles being seized by U.K. police during 2007, of which some 40 percent were crushed or sold after no proof of insurance was provided.

Evolution of Distribution Methods

Some 30 years ago, the European motor market was comprehensively led by an agency-based distribution process. Direct-selling insurance was a tiny part of the total scene other than for some specialist insurers, principally in France and Germany. The course of the past 30 years has seen a radical reshaping of the distribution of MTPL insurance. In 1985 Direct Line was founded in the United Kingdom, bringing the concept of telephone-based sales to financial services products on a large scale for the first time. Its success quickly spawned imitators—Churchill initially, then Admiral, and others—and the major U.K. composite insurers found themselves obliged to follow suit. The telesales vision has spread into Europe, not so much in markets like

the German one, where traditional agency links are often very deep-rooted, but notably in “new” European economies such as the Spanish one.

Beyond the telephone, the Internet has quickly established itself as an alternative (and often a cheaper) means to distribute MTPL insurance. Again, the United Kingdom is leading the field, turning around preconceptions about the true “process of the future” as regards the distribution of motor insurance—the U.K. market is now awash with Internet search engines whose role is to save consumers the trouble of visiting each motor Internet proposal separately—these engines automatically drive through all Internet pricing options and deliver to the consumer a page showing all the leading options, listed by price.

A third form of distribution has further complicated the pattern. This has been the advent of the food and drink supermarkets into financial services. Businesses such as Tesco’s, which previously had no background in financial services, now not only offer credit cards and other banking services, but also sell many forms of insurance, both life and non-life. Their market share continues to grow. Although they probably will not catch up with either the telephone or the Internet, they have had a material impact.

Accordingly, Europe is itself in a transitional phase, at least with regard to how motor insurance is being distributed.

CHAPTER 12

Conclusion

Serap O. Gönülal

MTPL insurance is a fundamental public good with potentially significant positive externalities. It may be managed directly by government or by the private sector under supervision.

The legal framework, premium and reserving based on actuarial projections, guarantee funds, information systems, and reinsurance techniques all are crucial for the development of a healthy MTPL insurance system. In developing countries, the normal practice is to employ prescribed premiums, with policy conditions being set by the government. As markets mature, countries should move toward greater freedom in setting premiums, thus leading to a more efficient allocation of risk and resources.

In a market with poor reserving standards, a lack of sufficient market data, and poor claims experience, there is a danger that companies or government will set premiums below profitable levels, with negative consequences for the solvency of companies. This situation amounts to the government making a promise to the community to pay out a certain level of benefits, while only raising a part of the financing needed for the promise. This type of action is never sustainable. Thus the insurance company or companies must be able to adjust premiums to changing market and legal conditions. In order to

implement sound tariffs, it is also crucial to improve the standards of data collection. With better data, tariffs can be set more precisely, and more risk-sensitive rating factors can be introduced. This should ideally improve the profitability of companies, while encouraging improved behavior on the part of drivers.

Insurers set premiums according to their analysis of the likelihood that the policyholder will make a claim and the likely cost of such a claim. Premiums are thus influenced, among other things, by road safety conditions or the price of repair and spare parts, medical costs, judicial attitudes, and numerous other factors. The price paid by the policyholder is also affected by different national taxes and levies. For example, the tax on motor insurance varies from zero in most new European Union (EU) member states, as well as Sweden and Norway, to more than 55 percent of the premium in Denmark.

The MTPL insurance premium payable by the policyholder (the gross premium) comprises the annualized expected cost of claims (the pure premium) plus loadings for various types of expenses, taxes, and the cost of supporting equity capital less any allowance made for investment income on technical provisions and reserves. The pure premium is normally determined as the average cost of claims multiplied by the expected frequency of claims.

Moving from Prescribed Tariffs to Liberalization

Deregulation should lead to an increase in competition in MTPL insurance, including price competition and intensified differentiation among premiums. This competition is based on the application of “rating criteria”; that is, properties in connection with the insured risk, which are employed in differentiating the premiums. Deregulation occurred in the United Kingdom in 1968 and in Germany in 1994 (as the result of an EU directive). Until then, motor third-party liability rates in Germany were approved by the supervisory authority.

Before moving to liberalization of the MTPL market, the necessary conditions should be set up for the protection of policyholders as well as the solvency of insurance companies. In the process of deregulation, priority should be given to pricing. One possible area could lead to problems: erroneous pricing compounded by incorrect assessment of the effects of a rate change. Many rate changes are quite complex, involving adjustment to various load-

ings and discounts. Insurers and policyholders both benefit from reduced claims expenditure: insurers earn higher margins, and policyholders come to enjoy lower premiums thanks to the ensuing price competition.

Claims Management and Underestimation of Claims Inflation

In projecting future results, insurers must predict future levels of claims inflation. This is a difficult task. While there is a lot of historical data, it is impossible to be certain that this information is a good indicator for the future. The problem may be more difficult in developing markets. Here, the value placed on life—and hence the compensation for death or bodily injury—has often been significantly lower than in more developed markets. In addition, it can take some time for the general public to appreciate their right to claim and for courts to develop a consistent approach to assessing awards for injury.

In many developing countries, the scope of the data policy and claims data collected seems to be quite insufficient and should be extended by introducing additional information that can be useful in the future in the rate-making process and claims reserving. The cooperation between the regulatory body and the insurance association should lead to the establishment of a reliable claims database that will help insurers and supervisors to confirm the right price for various categories of products.

Tariffs for MTPL insurance, which are generally compulsory, should be based on objective statistical data rather than political pressure. The comprehensive compilation of statistical data regarding the frequency and severity of losses is an essential condition for computing TPL tariffs and technical provisions accurately. Every insurance company should collect detailed information about policies written and claims reported. Companies should be legally required to store both policy and, especially, claims data in the form of a register of every change in the data set, together with the particular date of change. Such a structure guarantees that the database will preserve all of the information required for the management of insurance contracts, including actuarial calculation of reserves.

It remains to be seen how quickly the accident experience of MTPL insurers in developing countries will become consistent with that of devel-

oped countries. Claims costs are a function of claims frequency and claims quantum. The quantum of claims has a virtually unbroken 60-year history of inexorable rise at a pace faster than domestic inflation. This has only been breached where government intervention has legislated lower benefits—for example, in Ontario and South Africa. In general, however, the quantum of claims is not such a good target because, in most developing countries, injury compensation is inadequate when considered against the damage and hardship caused to the injured party and his or her dependents. However, reducing the frequency of claims is an important objective. If targeted road safety measures are not successful in counteracting the rapidly rising traffic density, the large number of victims of road accidents will continue to climb. The developments in Poland, Turkey, and a number of Commonwealth of Independent States countries, where a particularly large number of people are killed in road accidents, are a cause for concern, from both economic and social perspectives. Safer roads could greatly reduce the costs of motor insurance losses for insurance companies and society as a whole. The insurance industry, partly through its pricing and claims management policy but more effectively through a central body such as the claims guarantee fund, should be intimately involved in efforts to prevent road injuries.

Positive developments are evident in European countries. For instance, both the number of road accidents involving personal injury and the number of fatalities have been greatly reduced. The European Union has set its sights on achieving “Objective: –50 percent,” which seeks to halve the number of road accident fatalities between 2001 and 2010. Some countries, such as the Scandinavian countries and Switzerland, have even committed to the “Vision Zero: No road accident fatalities.” Together with the United Kingdom, these countries also boast the fewest road accident fatalities per inhabitant. Germany is close behind them.

To help strengthen institutions and create effective partnerships to deliver safer road traffic systems, such partnerships should exist horizontally between different sectors of government and vertically between different levels of government, as well as between governments and nongovernmental organizations. At the governmental level, this means establishing a close collaboration between the sectors of insurance, transport, public health, finance, the judiciary, and others concerned.

A key factor in tackling the growing burden of road traffic injuries is the creation of institutional capacity across a range of interlinking sectors, backed both by strong political commitment and by adequate and sustainable resources. Industry shares responsibility for road safety by designing and selling vehicles and other products, by using road traffic systems to deliver its products, and by employing people who use roads to get to and from work. Recognizing this responsibility, industry has contributed to improving road safety.

The insurance sector is also well placed to contribute. For example, Finland's Insurers' Fund investigates every fatal traffic injury in the country and provides the resulting data to the government of Finland and others with an interest in road safety. The Insurance Institute for Highway Safety in the United States provides data on the crash performance of new cars and other road safety issues to government agencies and independent research institutes.

The General Insurance Association of Malaysia (PIAM) was formed in May 1979, in compliance with Section 3(2) of the Insurance Act, 1963. PIAM is the statutory association recognized by the government for all registered insurers that transact general insurance business in the country. PIAM has 37 members related to motor vehicle accident insurance. Certain insurance companies registered with PIAM play an active role in promoting road safety. They are involved in media campaigns promoting road safety during festive seasons and provide support services for vehicle repair and recovery. In addition, they provide tow truck service should motor vehicles become immobilized after an accident.

Rating Techniques

Different countries determine premiums and risk factors in different ways. The fundamental differences arise from the type of society. In some countries, factors such as age of the driver are important, and the premium rate applies to the driver. In other countries, rating and cover are based on the car (irrespective of the driver). Another important factor, age of the vehicle, is used in very different ways in different countries. In some countries, the actual age of a vehicle is taken into account, leading to changes in the annual premium. With increasing vehicle age, the premium decreases.

Minimum Requirements for a Third-Party Liability Insurance System

The following are the minimal preconditions for implementing compulsory TPL insurance:

- An adequate legal framework is essential.
- Tariffs for compulsory insurance should be based on a reliable statistical foundation and database. Availability of reliable basic data is also essential for effective market discipline. The insurance regulatory and supervisory authorities should establish a reliable claims database that will make public the average pure premium for various generic risk categories. The compilation of statistical data regarding the frequency and severity of losses is an essential condition for accurately computing TPL tariffs and technical provisions.
- Guarantee funds should be established to compensate victims when there is no insurance coverage (for example, in the case of bodily injury claims for accidents caused by hit-and-run drivers or uninsured motorists).
- An adequate monitoring system should be established.
- Compulsory insurance should be written by sufficient companies to ensure competition while maintaining efficiency. Often a minimum market share (say, 4 percent) must be maintained to retain a license.
- The claims management procedure should be transparent.
- Companies wishing to underwrite insurance in the domestic insurance market should be licensed. Strict licensing criteria are needed, and the law should set out at least the minimum requirements for licensing and the procedures for obtaining a license. The following are minimum licensing requirements: (a) legal form (joint stock company or mutual company), (b) business plan (which could include pro forma financial statements, a capital plan, and projected solvency margins), (c) managerial requirements (fit-and-proper requirements for company officers), (d) shareholder information (reputation of strategic shareholders), and (e) financial requirements.
- Strong implementation and enforcement are needed, including to ensure the timely processing of claims, compliance with the compul-

sory MTPL premium levels wherever these are set by the authority, and mandatory purchase of MTPL insurance. In essence, strong implementation and enforcement are needed to protect policyholders. Insurance companies need to establish a complaint-handling system, and the association of insurance companies needs to have a clear, strong role in this area.

Why MTPL Insurance Should Be Compulsory

MTPL insurance is made compulsory out of a desire to protect the public from certain risks, which are becoming more important as the size and power of motor fleets grows. The community needs to understand that persons who drive cars (which have been described as “weapons of destruction” with more accuracy than is often admitted) collectively give rise to extensive injury and damage across society. In the century since the invention of the motor car, compulsory motor insurance has gradually accomplished the following:

- Raised awareness of the responsibilities of the driver
- Counterbalanced with compensation payments (to some degree) the injuries caused
- Improved community responsiveness to the need to improve safety in (a) road design, (b) vehicle design, (c) driver skills, (d) driver condition (for example, not drinking and driving), (e) matching driver experience to the capabilities of the vehicle (lower-power vehicles for younger drivers), (f) car occupant safety (use of seatbelts and child seats), and (g) pedestrian behavior.

In contrast, countries without compulsory MTPL insurance have made much slower progress in all of these important matters.

The chance for all persons to obtain affordable MTPL insurance coverage has a great influence on the mobility and thus the economic development of a society. Moreover, if the state imposes an obligation to insure, it implicitly accepts some responsibility for ensuring a viable market result.

With the exception of automobile liability and employers’ liability, it is hard to suggest the kinds of risks for which insurance cover should be com-

pulsory. The need for certain types of compulsory insurance will be appraised differently from one country to another. At most, compulsory insurance is advisable in the following types of cover:

- Branches that are more closely related to the social sector than to private insurance
- Specific areas where compulsory insurance is justified by the seriousness of risk exposure or by its generalized nature (automobile liability or occupational accidents, for instance)
- Areas where premium payments should be divided on an equitable basis among the group of policyholders under consideration
- Sectors for which effective oversight is available at a reasonable cost. Concern for losses incurred by third parties may also justify the implementation of mechanisms that serve to compensate for the failure to comply with insurance requirements or for the default of an insurer (for example, a guarantee fund for automobile liability insurance).

In most instances, the setting of uniform rates is not required, since competition will normally have an impact in the field of compulsory insurance, as it does in other categories of insurance. Should it be deemed preferable to set rates, it is important that tariffs take into account available statistical data and the economic situation of the sector under consideration.

Experience in Turkey

The pattern of development in Turkey illustrates the positive achievements that have followed the introduction of compulsory MTPL insurance. Not everything is right in Turkey yet: the accident frequency, in particular, is an important target for improvement. But the insurance framework is helping to solve problems rather than just create them.

After many years of work, Turkey has moved to MTPL insurance in which insurance companies, insurance agents, and the supervisory authority cooperate. The goal of this new order is to reduce the number of fake policies, to increase the penetration of insurance, and to enable the agencies to be useful

to the system rather than harmful. In this regard, a new operating system has been introduced through legal and operational changes.

The serious problems faced by the regulatory and supervisory body and the insurance sector before establishing TRAMER, Turkey's central database for insurance information, were as follows:

- High percentage of uninsured vehicles
- Incorrect application of the bonus-malus system
- No uniform claims history
- Unrecorded policies and fraud (loss of premiums)
- Organized fraud
- Poor competitive practices including price dumping
- Manual issuance of policies
- Lack of uniform data
- Drain on the guarantee fund
- Loss of tax revenue
- Bankruptcy of some insurance companies.

Since TRAMER began operations, some of these problems have disappeared, while some have diminished. In the future, insurers will have to take further changes in market conditions on the technical or financial side carefully into account in their pricing levels. This is needed to avoid the kinds of deficits in MTPL insurance that existed at the end of the 1990s in several countries.

This book therefore is dedicated to understanding issues related to the use of compulsory MTPL insurance and to determining the forms of injury compensation and system administration that are most suited to each individual country. There is no simple answer to any of these issues, but the examples set out in this book undoubtedly show what can be achieved if the central design of the system is appropriate.

Contributors

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Before joining the World Bank, from 1983 to 2000 she worked for the Turkish Treasury, serving as an expert, as head of the insurance department, and as deputy general manager of the Directorate of Insurance in the Undersecretariat of the Turkish Treasury. She has direct experience regulating and supervising insurance and reinsurance companies as well as intermediaries.

She has written numerous reports and technical papers on the subject of insurance regulation and supervision with the World Bank and the Turkish Treasury. She co-authored *Earthquake Insurance in Turkey*, which was pub-

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