



JAPAN'S EARTHQUAKE INSURANCE SYSTEM

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ABSTRACT: This paper discusses the current status and future prospects of the residential earthquake insurance system in Japan. For about 40 years since its inception in 1966, the system has undergone many improvements based on lessons learned from past earthquakes: including the premium discounts taking into account the seismic resistance of buildings which were introduced after the 1995 Hyogoken-Nanbu Earthquake, the most challenging event the system has ever faced. Studies are also being conducted to establish a system that allows the insurance rates to be scientifically and effectively determined depending on risks. Earthquake insurances are expected to play a greater role in withstanding social and economic losses due to large seismic events that are predicted to occur in the future.

Key Words: Earthquake Insurance, Risk, Insurance Premiums, Reinsurance

INTRODUCTION

Earthquake insurance in Japan falls into two categories depending on the type of property covered. One category, called household earthquake insurance, covers residential buildings and the household goods contained in those buildings. The other category of earthquake insurance covers property other than housing, primarily commercial and business buildings, and is obtained as an extended coverage rider on fire insurance policies. The latter category is now available with a great variety of coverage options at wide-ranging premium rates, and the path of alternative risk transfer (ART) has also become available recently, so it would be impossible to deal exhaustively with this subject here. This paper deals only with household earthquake insurance, which covers earthquake damage to personal property in Japan. Hereafter, the term "earthquake insurance" will be used in reference only to household earthquake insurance.

We could go back more than a century to examine the early stages of earthquake insurance in Japan, but it was not so long ago that earthquake insurance for housing began to be widely sold. Serious efforts in this area began after the Niigata Earthquake in 1964, leading to Japan's current system which is unique in its cooperation between private non-life insurance companies and the national government. The system, now nearly forty years old, met its greatest challenge in the Hyogoken-Nanbu Earthquake of 1995. It has undergone numerous product refinements since its inception, including expanded coverage and revised premium rates, and now plays an important role in stabilizing the lives of consumers. Still, like the earthquake insurance systems of other countries, Japan's earthquake

insurance system continues to face several challenges. Further refinements and improvements are needed to ensure that this system can fulfill its role of covering economic losses for victims of the kinds of large-scale earthquakes that are being predicted in Japan.

CHARACTERISTICS OF JAPAN'S EARTHQUAKE INSURANCE SYSTEM

Japan's earthquake insurance system has several characteristics that distinguish it from other forms of insurance. Table 1 summarizes these characteristics. The fact that fires following earthquakes are covered under earthquake insurance – not fire insurance – is often pointed out as the most significant difference between Japan and North America or Europe in the area of earthquake insurance. Many measures are being pursued to make cities and buildings more fireproof, but this is still heavily influenced by Japan's building characteristics and urban structures which include urban areas with concentrations of wooden dwellings, involving the threat of fires spreading over large areas.

Table 1. Characteristics of Japan's earthquake insurance system

Characteristic	Summary	Background/future issues
Limitations on covered property	Buildings used as housing and the household goods they contain.	The primary goal is to stabilize the lives of disaster victims.
Automatic inclusion as default	Included as rider on fire insurance policy for the same property.	Reducing the costs of insurance policies.
Coverage of various disasters related to earthquakes	Covers losses from earthquakes, volcanic eruptions, tsunamis, fires following earthquakes, etc.	
Limited percent coverage	Policyholders choose within the range of 30% to 50% of fire insurance coverage.	
Cap on benefits	Up to ¥50 million for a building and ¥10 million for household goods.	
Benefits paid according to three levels of damage assessment	Damage is classified as a total, half, or partial loss to determine benefits.	Rapid payout of insurance benefits to large numbers of disaster victims.
Reinsurance by government	Excess-of-loss reinsurance in three levels.	Covering losses that exceed the capacity of private insurers.
Premium rate discount system	Discounted premium rates for highly earthquake-resistant buildings and new buildings.	Sophisticated functional classification based on assessment of earthquake resistant performance.
Protection of policyholders	A policyholder protection mechanism provides 100% of benefits if a non-life insurance company fails.	

CURRENT STATE OF EARTHQUAKE INSURANCE POLICIES

Initially, earthquake insurance was automatically included with comprehensive insurance for dwellings. This format, adopted to prevent adverse selection by policyholders, was continued until the earthquake insurance revision of 1980. The current approach of automatically providing earthquake insurance riders as the default option was adopted in 1980 in order to extend the availability of an earthquake insurance option to the holders of all kinds of fire insurance policies. (Under the current system, policyholders can exclude earthquake insurance coverage, but earthquake insurance is automatically added to all types of fire insurance policies which allow this option if desired by policyholders.) After that change, the rate of earthquake insurance declined year by year until 1995, when a rapid increase in earthquake insurance policies followed the Hyogoken-Nanbu Earthquake. Figure 1 illustrates the numbers of earthquake insurance policies and amounts covered over the past 15 years.

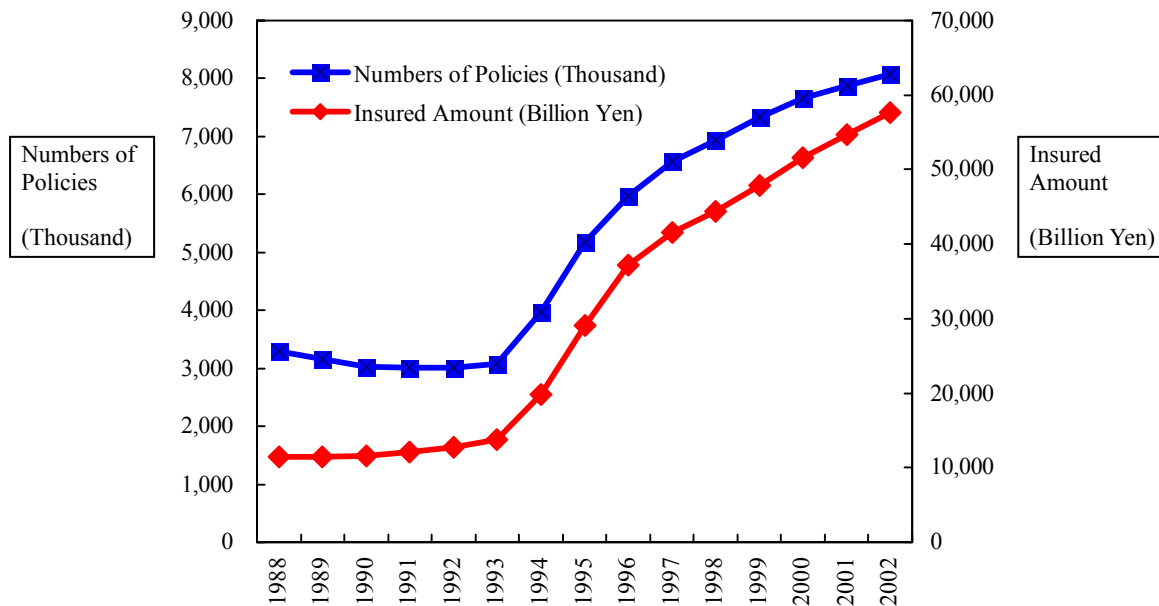


Fig. 1 Trends in earthquake insurance policies (past 15 years)

The perception of natural disaster risk varies according to region, and this is reflected in the distribution of insurance policies. There is a higher percentage of policyholders in the Tokyo region and Shizuoka, where residents are concerned about Tokai earthquakes. It is now considered practically a certainty that a Nankai earthquake and a Tonankai earthquake will occur in the first half of the twenty-first century, and this has led to an increase in insurance policies along the Pacific coast in the Chubu, Kinki, and Shikoku regions. Figure 2 shows the proportions of fire insurance policies which include earthquake insurance riders as of 2002.

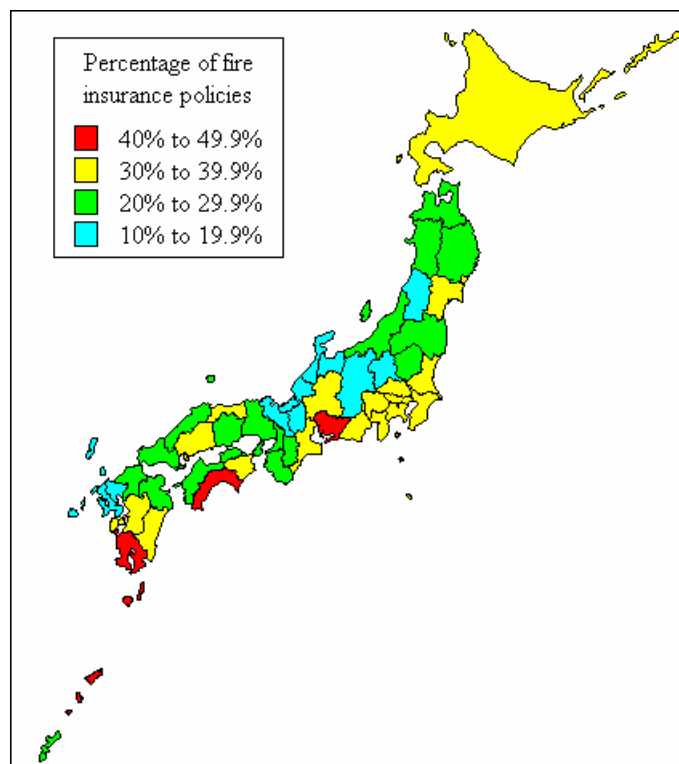


Fig. 2 Percentage of fire insurance policies with earthquake insurance riders

THE HYOGOKEN-NANBU EARTHQUAKE AND SUBSEQUENT MEASURES

The Hyogoken-Nanbu Earthquake had a significant impact on the history of disaster preparedness in Japan and provided an impetus for reconsidering the current state of Japan's earthquake insurance system. Although several damaging earthquakes had occurred since the system was created, there had been few cases of earthquake damage being concentrated in urban areas. In the Hyogoken-Nanbu Earthquake, insurance benefits totaling over ¥70 billion were paid on more than 70,000 claims, and the government's reinsurance system came into play for the first time. Events during this time are detailed in the reference (NLIRO,2003). A major development in terms of the insurance system was the introduction of discounted premium rates based on a building's earthquake resistance. These discounts are linked to a housing performance indication system under the Housing Quality Guarantee Law. Premium rates for earthquake insurance are discounted according to the building's grade of earthquake resistance as classified by the housing performance indication system. Also, since there is a significant difference in earthquake resistance between buildings built before and after the 1981 revision of the Building Standards Law, dwellings constructed since June 1, 1981 are subject to a 10% discount on premium rates. At present, the maximum premium rate discount available to owners of earthquake-resistant buildings is 30%.

Table 2. Current earthquake insurance premium rates

Zone	Area(Prefecture)	Non-wooden structure	Wooden structure
1	Hokkaido,Fukushima,Shimane,Okayama,Hiroshima,Yamaguchi,Kagawa,Fukuoka,Saga,Kagoshima,Okinawa	¥0.50	¥1.20
2	Aomori,Iwate,Miyagi,Akita,Yamagata,Ibaraki,Tochigi,Gumma,Niigata,Toyama,Ishikawa,Yamanashi,Tottori,Tokushima,Ehime,Kochi,Nagasaki,Kumamoto,Oita,Miyazaki	¥0.70	¥1.65
3	Saitama,Chiba,Fukui,Nagano,Gifu,Aichi,Mie,Shiga,Kyoto,Osaka,Hyogo,Nara,Wakayama	¥1.35	¥2.35
4	Tokyo,Kanagawa,Shizuoka	¥1.75	¥3.55
<p>Per year of insurance coverage and ¥1,000 of amount covered</p> <p>Construction age discount: If it is confirmed by written records such as building registration that a building was completed since June 1, 1981, then the above premium rates are discounted by 10%.</p> <p>Earthquake resistance discount: The following discounts apply, based on a building's earthquake resistance class under the housing performance indication system.</p> <p>Class 3 (sufficient earthquake resistance to prevent destruction or collapse by a force 1.5 times the seismic force indicated in the Building Standards Law): 30%</p> <p>Class 2 (sufficient earthquake resistance to prevent destruction or collapse by a force 1.25 times the seismic force indicated in the Building Standards Law): 20%</p> <p>Class 1 (sufficient earthquake resistance to prevent destruction or collapse by a the seismic force indicated in the Building Standards Law): 10%</p> <p>If earthquake resistance discount is applied, then the construction age discount cannot be applied to the same building.</p>			

FUTURE TRENDS

Izawa and Tsubokawa (1998) include a detailed discussion of the kinds of improvements and changes expected in the earthquake insurance system following the Hyogoken-Nanbu Earthquake. Based on subsequent developments, Table 3 lists the most important areas for improvement in the earthquake insurance system as of the present time.

Table 3. Areas for improvement in the earthquake insurance system

Earthquake insurance issue	Details
Easing restrictions on percent coverage in relation to fire insurance	The amount of earthquake insurance coverage is limited to 30-50% of the amount of fire insurance coverage. This should be expanded for more widespread adoption.
Expanding scope of compensation	Providing coverage for economic losses (secondary losses) in addition to physical losses.
Improving risk assessment methods	Using earthquake risk evaluation based on earthquake source modeling that conforms to the probabilistic seismic motion prediction maps prepared by the government, improving the accuracy of risk assessment in relation to building performance, and correlating with new earthquake countermeasures such as damping and seismic isolation.
More detailed risk categories	In risk analysis and the design of insurance products, reflecting the risk level in each insurance policy due to conditions of the building, ground, urban area, etc.
Incentives to reduce risk	Expanding earthquake hazard mitigation by introducing an insurance discount system for buildings and household goods which have been subjected to reasonable risk countermeasures.

Both the government and the non-life insurance industry share the goal of making earthquake insurance widespread. However, there are diverging views on the steps to be taken in order to enhance the attractiveness of earthquake insurance products. Here, we have mentioned proposals such as easing restrictions on percent coverage in relation to fire insurance (currently 30-50%) and adding coverage for indirect losses such as expenses and lost opportunities in addition to physical losses. Of course, the financial aspects must be studied carefully to ensure that the system could respond properly in the event of a massive earthquake.

We have conducted our own studies on the probabilistic earthquake hazard map (NLIRO, 2003) with regard to improvements in risk assessment, and we are currently engaged in studies on the preparation of insurance premium rates that conform to the government's earthquake hazard assessment data with improved accuracy, reflecting the latest knowledge. The establishment of a more detailed geographical breakdown of risk is largely dependent on GIS infrastructure. The Digital National Land Information database needs to be further refined and improved. Tsubokawa (1996) describes the elements that could be used for further sub-categorization.

There are a variety of viewpoints concerning incentives for risk reduction, and these have not necessarily been organized. The costs of reinforcement for earthquake resistance are much higher than the insurance discounts, and even a large reduction in the current insurance rates does not constitute an economic incentive to retrofit a building for better earthquake resistance. Local governments are engaged in an expanding array of projects to diagnose and improve earthquake resistance for the sake of regional disaster preparedness, and the possibility of linking risk reduction programs to these projects is also being considered. However, there have been few cases of actual retrofits even in Yokohama, where the municipal government provides free earthquake resistance diagnoses and significant subsidies on renovations for earthquake resistance. The reason seems to be related to awareness of earthquake risks.

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