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1995   1999   panel data   t

I.   <u>Abstract</u>

   This paper investigates asymmetric information problems for the automobile insurance market in Taiwan.   Using panel data for comprehensive automobile insurance coverage from 1995 to 1999, this paper analyzes how types of coverage, deductible amounts, and experience ratings have affected the adverse selection and moral hazard problems in Taiwan's automobile insurance market.   The empirical results provide partial evidence to demonstrate that loss frequency and loss ratio were reduced by the addition of self-selection mechanisms in policies with different levels of coverage.   In addition, the deductible amounts, experience ratings, and better control of underwriting and claims processing were shown to have possibly decreased potential losses from adverse selection and moral hazard problems.

   Keywords: auto insurance, asymmetric information**,** adverse selection, moral hazard**,**
            self-selection mechanisms, experience ratings, the deductible

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II. Introduction and Research Purpose

Asymmetric information has been one of the major topics in insurance research since and Rothschild and Stiglitz (1976) and Shavell (1979) pioneered the development of the theoretical framework of moral hazard and adverse selection for insurance. Their work inspired a number of other researchers in the area of insurance theory over the past two decades—e.g., Miyazaki, 1977; Wilson, 1977; Radner, 1981; Holmstrom, 1982; Dionne, 1983; Rubinstein and Yarri, 1983; Crocker and Snow, 1986; Cooper and Hayes, 1987; Arnott and Stiglitz, 1988; Hellwig, 1988; Hosios and Peters, 1989; Hoy, 1989; Mookerjee and Png, 1989; Abreu, Pearce, and Stacchetti, 1990. The theoretical literature has identified many insightful concepts (such as incomplete coverage, commitment, re-negotiation, and self-selection mechanisms) for understanding asymmetric information in the insurance market. Moreover, several more recent papers (including Dahlby, 1983; Dionne and Doherty, 1994; Puelz and Snow, 1994; and Chiappori and Salanie, 1997) have used data from automobile insurance to conduct further empirical tests to investigate whether asymmetric information problems exist in each insurance market.

On the other hand, adverse selection and moral hazard problems are also well-recognized by insurers in real practice. In addition, insurance companies have developed many provisions—such as deductibles, co-insurance, and experience ratings—to reduce possible losses caused by adverse selection and moral hazard problems. For example, insurers may design different types of insurance coverages and deductible amounts with different costs to sort out the varying risk levels of the insured. Insurers have also used experience ratings in automobile insurance and workers compensation to control potential problems of asymmetric information.

In Taiwan, it has been widely believed that comprehensive automobile insurance coverage has long suffered from very severe asymmetric information problems. Insurance companies in Taiwan have developed several methods to overcome these problems. To explore these problems with empirical evidence, I have collected panel data for automobile insurance from 1995 to 1999 to account for how different types of coverage, deductible amounts, and experience rating systems affect adverse selection and moral hazard problems. In addition, I also address how automobile insurers in Taiwan have developed a self-selection mechanism for comprehensive coverage to deal with asymmetric information problems.

The empirical evidence provided in this paper confirms that there may exist asymmetric information problems in comprehensive automobile insurance coverage in Taiwan. Moreover,

the empirical results provide partial evidence to demonstrate that loss frequency and loss ratio were reduced by self-selection mechanisms included in the contracts with different levels/costs of coverage.   In addition, the deductible amounts and experience rating systems were found to decrease possible losses from moral hazard and adverse selection problems.

III. Empirical Findings and Conclusion

Using panel data of comprehensive automobile insurance coverage from 1995 to 1999 in Taiwan, this paper has analyzed how different types of coverage, deductible amounts, and experience rating systems have affected the adverse selection and moral hazard problems in Taiwan's automobile insurance market.   The empirical results provide partial evidence to demonstrate that loss frequency and loss ratio were reduced by issuing different types of coverage policies to create self-selection mechanisms and also by the introduction of the deductible.   Moreover, the types of deductible amounts, experience rating systems, and better control of underwriting and claims processing were shown to have reduced possible losses caused by the moral hazard and adverse selection problems.

From empirical results, we find that the percentage of vehicles insured for comprehensive coverage declined from 27 percent in 1986 (or almost 30 percent in 1990) to about 8 percent in 1999.   This decline poses an important question: What type of self-selection might be operating in this market?   The selection of a different policy type may be due to the differences in the risk aversion attitudes of the people or the behavior changes that result from choosing different policies.   However, due to a lack of suitable individual level data, we are unable to test in this paper whether self-selection is working on the basis of assessment of accident proneness, through differences in risk aversion, or through differences in the willingness to perpetrate fraud. This issue is very important in the asymmetric information literature and certainly deserves more investigation for future research.

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