

CHAPTER 2

LITERATURE REVIEW

Within the last three decades, interest has shifted towards analyses of market performance under asymmetric information, rather than merely focusing on perfectly competitive markets. Asymmetric information is a common feature in market interaction. For instance, the seller of a good always has more information about the quality of good than the prospective buyer. While in a job market, the employer is unable to observe the ability of job applicant (Löfgren, Persson, and Weibull, 2002).

A number of analytical and empirical studies on the various models techniques have emerged to explain the nature of equilibrium in markets with asymmetric information as well as the problems generated under this condition.

According to Akerlof (1970)'s work on asymmetric information, "The Market for 'Lemons': Quality Uncertainty and the Market Mechanism," this situation explained adverse selection in the markets. In particular, he gave an example in the used car market to show the evidence of private information leading to the malfunctioning of markets. He found out that only the "lemons" (bad quality used cars) would remain in the market if there exists with the condition of asymmetric information when the used car seller typically has more information about the quality

of the car than their potential buyer. Besides that, it also happened in the insurance market where only high-risk group will purchase the insurance if the insurers cannot observe the risk types of their prospective customers. Consequently, the low-risk group dropped out from the market. His study has since become the most important contribution to the literature on economics of information.

As complement to the study of Akerlof (1970), Rothschild and Stiglitz (1976) established their own model to analyze the equilibrium in competitive insurance markets. They assumed that customers in the market are identical, but not in term of probability of loss. In addition, the insurers are unable to discriminate the risk types of the customers. Thus, the insurers screened their customers through self-selection mechanism. They offered the different combinations of premium and deductibles to the customers and let them chose the most preferred insurance policy. Basically, there were two possible equilibriums in the insurance market in the case of asymmetric information: pooling equilibrium and separating equilibrium. They found that the pooling equilibrium where all customers bought the same insurance did not exist in the market. However, they showed that, there was a unique separating equilibrium where high-risk group purchased full insurance contract while low-risk group purchased partial insurance coverage in the insurance market in an environment of asymmetric information. The high-risk group purchase partial insurance coverage at lower price associated with higher deductible. However, in order to avoid the high

deductible will be charged, they would choose the full insurance coverage with high premium.

To investigate how a competitive insurance market would allocate insurance contracts, Wilson (1977) in his paper “A Model of Insurance Markets With Incomplete Information”, found that no stationary equilibrium exists when insurers have static expectations regarding their competitors’ behaviors. In this paper, they assumed that insurers could not observe the riskiness of their customers. However, by revising the expectations of the insurers in terms of changing their offers and their expectations in response to their market experience, there is a possibility of equilibrium existing in the market.

Few years later, Wilson (1980) carried out other investigations using a variant of Akerlof’s model of the used car as a flexible paradigm. In his paper, he examined the nature of equilibrium in the market with problem of adverse selection. He analyzed the equilibrium under three different conventions of setting price, where an auctioneer sets the price in the first case, buyers set the price in the second case and the third case, sellers set the price in the market. He showed the evidence of equilibrium which was characterized by a single price existed only if the price was set by an auctioneer. The market entailed the situation of excess supply or excess demand when sellers or buyers set the price. In other words, the market with adverse selection was sensitive with the price-setting conventions.

Riley (1979) discovered new findings in the paper of, “Informational Equilibrium”. He studied the viability of signaling or informational equilibrium in the market when high quality products sellers were more likely to signal their quality to their prospective customers through some activities. However, he found that there was noncooperative equilibrium when there is transmission of information via markets.

Following Riley’s study, Engers and Fernandez (1987) explored the existence of the Pareto-dominant separating and zero profit equilibrium which were argued by Cho and Kreps (1987) and Riley (1985) in the market with hidden knowledge and self-selection. They provided the evidence of its existence. Under assumption that the seller had more information than the buyer, they showed that equilibrium was the unique reactive equilibrium by applying Riley (1979)’s reactive equilibrium concept to a market.

Recently, some researches regarding efficiency were carried out in the insurance market with imperfect information. Crocker and Snow (1985), pointed out that the resource allocations in the market were facing some additional constraints in the presence of asymmetric information in their investigation on the relationship between competitive equilibrium and efficient allocations in an insurance market in an environment of asymmetric information. They commenced the study by employing the definition of second best efficiency which was introduced by Harris

and Townsend (1981) to the insurance model by Rothschild and Stiglitz (1976). In addition, they found that Miyazaki-Wilson type market equilibrium consistent with second best allocation in terms of an analogue to the First Optimality Theorem.

Hoy (1982) investigated the impact of imperfect categorizing risk on welfare criterion when the insurance market was presence of asymmetric information. By comparing various type of equilibrium, he indicated that the low-risk group was better off than those who categorized as the high-risk group. However, the equilibrium positions before and after categorization will influence the welfare implications. If the initial equilibrium was the Nash no-subsidy, then a Pareto-type improvement in welfare will emerge. In contrast, both high- and low-risk types who were categorized as high-risk group will be worse off if there was a pooling equilibrium initially.

Crocker and Snow (1986) examined the efficiency effects of categorical discrimination based on age, sex and race in insurance market. The cost of categorizing activity played a crucial role in this context. They showed that the market equilibrium to be potentially Pareto superior if the categorization was costless. On the other hand, the market does not in Pareto improvement since the categorization is costly.

After a few years, some empirical analyses of automobile insurance market with adverse selection were implemented. These analyses had provided evidence that adverse selection existed in almost all insurance market. For instance, Dahlby (1983) revealed that the Canadian automobile insurance market entailed with the problem of adverse selection, by using the data from the Insurance Bureau of Canada, which consisted nine classes of drivers over the age of 20 for the years 1975-1978. In attempting to test for adverse selection, the model for insurance market was estimated by using two stages least squares on pooled cross section data. Besides that, he also showed that the single females had to pay higher premium without sexual discrimination. However, the proportion of single females who purchased collision insurance was reduced under this condition.

Puelz and Snow (1994) have shown that adverse selection also occurs in the market of automobile collision insurance by utilizing the individual insured data for year 1986 in Georgia. They estimated premium-deductible schedule and demand function for a deductible in order to test for the theories of adverse selection and market signaling. They found that there was separation by risk type in the insurance market: the high-risk group purchased full insurance coverage, while the low-risk group purchased partial insurance coverage. They also showed evidence that the market was consistent with market signaling theory, where high-risk group has incentive to choose low deductible with relatively high premium and low-risk group tended to choose high deductible but lower premium. However, there was no cross-

subsidization within high- and low-risk groups that low-risk group subsidized the insurance contracts to high-risk group in market equilibrium.

Richaudeau (1997) provided evidence of the presence of adverse selection in French automobile insurance market by using a cross sectional data set from the Institute National de la Recherche sur les Transports et leur Sécurité for year 1995. It was seemed not too serious. Nevertheless, the problem of moral hazard played the main role in affecting the performance of insurance market with asymmetric information.

In order to counteract the effects of adverse selection, economists suggested some useful signals in the literature. For example, Spence (1973) indicated that the education level is an important signal in the labor market since the employer is otherwise unable to discriminate between high productivity and low productivity employees.

Riley (1979), and Lang and Kropp (1986) developed Spence's signaling model. As a result, Riley showed the strong correlation between wages and education level of employee if the productivity of employee was unobservable, while Lang and Kropp supported the signaling model by using data on the high-school enrollments and dropout rates.

On the other hand, Puelz and Snow (1994) showed that deductible is a credible signal in Georgia's automobile insurance market due to the fact that the insurer cannot observe the probability of loss of insured. Whereas, Richaudeau (1997) verified that an important signal for insured parties to reveal their riskiness to insurer, was their choice between third party insurance and comprehensive insurance.