

# A Reexamination of the Service Quality Differential between Marketing Systems in Commercial Insurance

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## Abstract

Previous studies have shown that more costly insurance intermediaries can provide better service quality to clients in personal insurance. From an alternative perspective, this study attempts to verify the product quality hypothesis in commercial insurance with 245 effective questionnaires from Taiwan's top 1,000 manufacturing firms. By employing regression analyses, we test the impact of different marketing channels and the specific characteristics of firms on seven input as well as output dimensions related to service quality. We find mixed evidence for the product quality hypothesis. The findings support that the insurance broker dominates over the underwriting director in terms of consulting service. However, this is not the case in terms of renewal willingness due to the price concern.

**Keywords:** product quality hypothesis, insurance broker, underwriting director

## 1. Introduction

In Taiwan, marketing systems of the insurance market comprise direct underwriting and the insurance intermediary. The underwriting director, similar to the exclusive agent in the United States, can sell policies only for one insurer. Meanwhile, the insurance intermediary acts as the broker and the independent agent, and can sell products for various insurers. The main difference between the two intermediary channels is that an independent agent concentrates on personal insurance, such as car insurance and residential fire insurance, whereas an insurance broker focuses on commercial insurance, such as commercial fire insurance, liability insurance, engineering insurance, and other business insurance.

The issue on the coexistence of marketing systems has motivated researchers to contribute to the insurance literature. Some studies<sup>1</sup> highlight the relationship between the insurer and the agent, whereas others<sup>2</sup> focus on the relationship between the insured and the agent. Two hypotheses regarding the coexistence of marketing systems have been proposed: market imperfect hypothesis and product quality hypothesis. Market imperfect hypothesis claims that cost-intensive independent agents can survive in the insurance market, because customers are unable to recognize the difference in service quality of different channels, considering the presence of asymmetric information.<sup>3</sup> Product quality hypothesis asserts that independent agents can offer better services for the customers, e.g., providing risk assessment service for insurers<sup>4</sup> or coping with the conflict between policyholder and the insurer more efficiently<sup>5</sup>.

In the last three decades, many papers have provided discussions about product quality hypothesis. One area of the literature focuses on the analysis of cost efficiency, and suggests that independent agency insurers have higher costs, because they pay a higher commission to reward the agent's effort in providing better service quality when addressing conflict between the policyholder and the insurer.<sup>6</sup>

Another stream of literature discusses the advantages of an independent agent in terms of service quality. Trigo-Gamarra (2008) found that the independent agent can offer customers improved working time information gathering, documentation counseling interview, and contract conclusion rate. Eckardt and R athke-D oppner (2010) also found that the independent agent performs better than does the exclusive agent in terms of information service and contract conclusion rate, whereas the exclusive agent outperforms the independent agent in terms of additional services.

Trigo-Gamarra (2008) and Eckardt and R athke-D oppner (2010) provided evidence supporting product quality hypothesis in personal insurance. However, relatively few papers provide empirical evidence in commercial insurance. In the more complicated field of commercial insurance, we believe that a firm would demand more of the advantageous service of insurance intermediary. We intend to fill this gap by observing Taiwan's top 1,000 manufacturing firms in commercial insurance. As such, this work complements prior studies with an alternative perspective.

In addition, this paper contributes to the search cost hypothesis proposed by Posey and Yavas (1995). They suggested that an independent agent possesses an information advantage over the client, and can provide for their clients in the search for an appropriate insurer. As such, clients who have a higher search cost are expected to purchase insurance via the independent agent, but those who have a lower search cost are expected to choose direct underwriting<sup>7</sup>. We also believe that an insurance intermediary has an even higher information advantage than that of direct underwriting in commercial insurance. Therefore, this paper explores whether a difference in service quality exists between the insurance broker and direct underwriting for the manufacturing industry. Consequently, this paper could also verify search cost hypothesis proposed by Posey and Yavas (1995).

This paper attempts to examine product quality hypothesis by investigating 245 companies from Taiwan's top 1,000 manufacturing firms. The sample accounts for biased results caused by the heterogeneity among different industries, which results in the difference in the need for insurance. We evaluate service quality via a questionnaire that encompasses input and output service indicators. Input service indicators consists of six items: financial status and consulting service, insuring consulting service, premium consulting service, explanation service of policy clauses, professional competence

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<sup>1</sup> Joskow (1973); Cummins and VanDerhei (1979); Marvel (1982); Sass and Gisser (1989); Barrese and Nelson (1992); Blair and Herndon (1994); Barrese et al. (1995); Kim et al. (1996); Regan and Tennyson (1996); Regan (1997); Berger et al. (1997); Regan and Tzeng (1999); Klumpes (2004); Klumpes and Schuermann (2011).

<sup>2</sup> Posey and Yavas (1995); Kim et al. (1996); Posey and Tennyson (1998); Seog (1999); Venezia et al. (1999); Trigo-Gamarra (2008); Eckardt and R athke-D oppner (2010); Hsieh et al. (2014).

<sup>3</sup> Joskow (1973); Klumpes (2004).

<sup>4</sup> Blair and Herndon (1994); Regan and Tennyson (1996); Regan (1997).

<sup>5</sup> Barrese et al. (1995); Kim et al. (1996); Berger et al. (1997); Venezia et al. (1999).

<sup>6</sup> Barrese and Nelson (1992); Barrese et al. (1995); Berger et al. (1997).

<sup>7</sup> Posey and Yavas (1995); Posey and Tennyson (1998).

service, and risk analysis service. Output service indicators measure renewal willingness after a policy expired. Results show that for the majority of the 1,000 manufacturing firms, insurance brokers are perceived to have better consulting service than does direct underwriting. However, the willingness to renew the policy from insurance brokers is not higher than that from direct underwriting, possibly because of the price concern.

In addition, 92 out of the 245 sample firms purchased commercial insurance only from an insurance broker or direct underwriting. To confirm that our findings are not biased by the mixed sample, we rerun regression using 153 firms that experienced purchasing commercial lines via insurance brokers, as well as direct underwriting. Results remain qualitatively unchanged. Therefore, the findings support the argument that insurance brokers can offer better consulting service quality in commercial lines.

The article is organized as follows. In the next section, we discuss the Taiwan's marketing systems, relevant empirical literature, and derive our main hypotheses. Section 4 describes our data, and discusses the measurement of input and output service variables. The estimation results and robustness tests are reported in Section 5. The next section presents the discussion, and the final section concludes this paper.

## **2. Property & Liability Insurance and Marketing Systems in Taiwan**

In Taiwan's insurance market, approximately 55.8 million policies are sold from 19 property and liability insurance firms. The property and liability insurance market generally consists of commercial insurance<sup>8</sup> and personal insurance.<sup>9</sup> In 2016, commercial insurance accounted for about 33.3 per cent of premiums for property and liability insurance. In the same year, the written premiums for property and liability insurance reached US\$ 4,820 million.

Currently marketing systems of the property and liability insurance market in Taiwan can be divided into direct writer channel and the insurance intermediary. In respect of direct writer channel, it allows customers to purchase insurance from insurers who operate through mail and Internet marketing, or through a salaried-employee system. The total amount of premiums sold through the direct writer channel was approximately 2,526 million in 2016, which accounted for 47.6 per cent of the market. Meanwhile, the insurance intermediary acts as the broker and the independent agent, similar to America's independent agents, insurance brokers and independent agents can sell policies through various insurers. They own the policyholder list and can negotiate a claim more convincingly or take their customers to an alternative insurer if the claims of customer are not satisfied. The major difference between the two marketing channels in Taiwan are independent agents manage personal insurance, whereas insurance brokers focus on commercial insurance. The amount of property and liability insurance premiums sold through the insurance intermediary was approximately US\$ 2,295 million, which reflected a 47.6 percent market share. Due to the examination of the service quality differential between marketing channels in commercial insurance, therefore, only insurance broker channel and direct writer channel were selected.

## **3. Literature Review and Hypotheses**

Existing literature focuses on the underwriting functions of the agent or the service quality to the policyholder. From the underwriting function, an independent agent stands in an advantageous position with regard to risk assessment of the policyholder.<sup>10</sup> Regan and Tennyson (1996) noted independent agents can provide insurers with information about customer risk, which can be used in the underwriting

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<sup>8</sup> Such as commercial fire insurance, liability insurance, engineering insurance, marine insurance, aviation insurance, guarantee insurance.

<sup>9</sup> Such as automobile insurance, residential fire insurance, health insurance, accident insurance.

<sup>10</sup> Regan and Tennyson (1996); Regan (1997).

decision. They indicated that the insurer would prefer to adopt an exclusive agent when a policyholder's risk could be easily assessed such that an independent agent's assessment service is not required. By contrast, the insurer would prefer to adopt an independent agent when an independent agent's evaluation for a policyholder's risk information is important. Regan (1997) suggested that the insurer would prefer to adopt an independent agent for complicated products that require more risk assessment, but tend to choose an exclusive agent for simpler products for which less risk assessment is required.

From a policyholder's viewpoint, Barrese and Nelson (1992) noted that an independent agent can receive higher commission as compensation, because it can provide better service when tackling the conflict between policyholder and insurer. Berger et al. (1997) claimed that the independent-agency insurers have lower cost efficiency, because the insurer offers a higher compensation for better service quality of an independent agent. Inferring from a personal questionnaire survey, Trigo-Gamarra (2008) suggested that an independent agent can provide better service quality on working time information gathering, documentation counseling interview, and contract conclusion rate. Eckardt and R athke-D oppner (2010) also found that an independent agent provides better service than does the exclusive agent in terms of information service and contract conclusion rate. Venezia et al. (1999) proposed a theory framework to explain the coexistence of distribution systems. An independent agent has an advantage in claim settlement over direct underwriting. As such, in separating equilibrium, high-risk clients tend to purchase insurance via independent agents, whereas low-risk clients prefer dealing directly with underwriters. Hsieh et al. (2014) supported the theory of Venezia et al. (1999), and demonstrated that marketing channel choice could serve as a screening mechanism in an insurance market characterized by asymmetric information.

In prior literature, some empirical studies<sup>11</sup> support product quality hypothesis, whereas others<sup>12</sup> do not.

Cummins and Doherty (2006), Trigo-Gamarra (2008), and Eckardt and R athke-D oppner (2010) pointed out that an independent agent can offer clients pre-insuring services, including professional competence and coverage amount suggestions. Thus, an independent agent can reduce clients' transaction costs. Trigo-Gamarra (2008) maintained that the willingness to sign or renew a contract will rise when clients believe that an independent agent can offer better consulting service. As independent agents in Taiwan focus most of their business on personal lines, compared with insurance brokers and direct underwriting, which concentrate on commercial lines, this paper aims to analyze the latter two channels using the top 1,000 manufacturing firms that pursue commercial insurance. In addition, considering that we choose firms whose insurance policy remains in force, we use renewal willingness instead of contract conclusion rate. Such a choice is made to assess whether firms' perception of service quality could be reflected in their renewal behavior. If product quality hypothesis holds, we predict that insurance brokers could offer better pre-insuring consulting services for firms, compared with a direct underwriter. Firms would also exhibit higher willingness to renew the contract with their insurance brokers. These predictions produce the following two hypotheses:

H1: The insurance broker can provide firms a better pre-insuring consulting service.

H2: After the insurance policy expires, firms would have higher willingness to renew contract with the insurance broker.

#### 4. Data and Variables

This study conducted a questionnaire survey to gather data. To account for the heterogeneity in the need for insurance types across different industries, we chose firms which were listed on the top 1,000 manufacturing firms released by *Common Wealth Magazine* in Taiwan in 2013, and purchased commercial insurance as our sample. A total of 800 questionnaires were sent to managers or staff

<sup>11</sup> Barrese and Nelson (1992); Barrese et al. (1995); Kim et al. (1996); Berger et al. (1997); Trigo-Gamarra (2008), Eckardt and R athke-D oppner (2010); Hsieh et al. (2014).

<sup>12</sup> Joskow (1973); Etagar (1976); Cummins and VanDerhei (1979); Klumpes (2004).

responsible for the arrangement of firm's commercial insurance from July 2013 to December 2013. A total of 245 effective questionnaire samples were collected.

#### **4.1. Dependent Variables**

Measures of service quality should include input service, as well as output service indicators. The former focuses on pre-insuring consulting service, including offers of related insurance information, risk analysis and recommendation of the need for insurance, premium consultation, explanation of insurance clauses, professional competence service, and additional services. We evaluate pre-insuring consulting service via questionnaire, covering six input service dimensions comprising the below considerations. (1) Financial status and service quality consultation: in which the insurance salesperson would help the company analyze which insurer's financial status or service quality is better before purchasing insurance. (2) Consulting service of the insurance need: the salesperson would help the company analyze the most suitable coverage amount and scheme. (3) Premium consultation: the salesperson would help the company conduct price enquiry before purchasing insurance, and choose the insurer offering the lowest premium. (4) Explanation of policy clause: the salesperson would explain coverage in the policy thoroughly before purchasing insurance. (5) Professional competence service: the salesperson has adequate professional ability. (6) Additional services: in addition to planning commercial insurance for the company, the salesperson can offer additional risk analysis service.

The output service indicator measures client dependence on their salesperson after expiration of the insurance policy. This study evaluates this via the clients' willingness to renew after the policy expires with the following question: even if other insurance salespersons or other insurer offers a lower premium, would they still be willing to renew the policy with the current channel?

The foregoing service indicators are all measured by a seven-point Likert scale, determining the extent of perception on a specific service. The scale provides the following choices: "Strongly disagree", "Disagree", "Slightly disagree", "Fair", "Slightly agree", "Agree", and "Strongly agree", which are scored in sequence by 1, 2, 3, 4, 5, 6, and 7, respectively.

#### **4.2. Independent Variables**

In Taiwan's property and liability insurance market, personal insurance is mostly undertaken by direct underwriting, independent agents, banks, securities firms, and so on. By contrast, commercial insurance is sold via the insurance broker and direct underwriting. Given that this study analyzes commercial insurance, we replace the independent agent with an insurance broker. In addition, this paper includes control variables, covering a wide array of firm-specific characteristics such as the reason for insurance, capital structure, operating scale, total assets and annual total premium. Definitions of the variables are listed in Table 1.

### **5. Empirical Findings**

#### **5.1. Basic Statistics**

Table 2 shows descriptive statistics of all variables. To observe a significant difference in service quality and other firm characteristics between the insurance broker and direct underwriting, we split the sample into two groups. The mean of the sample in Table 2 shows that an insurance broker outperforms direct underwriting in terms of the six input service indicators and renewal willingness. The biggest difference exists in financial status and service quality needs, and premium consulting service. This result occurs because the insurance broker can explain insurers'

**Table 1:** Definition of independent variables

<b>Independent variables</b>	<b>Definition</b>
Insurance broker	Dummy variable: 1 when the insured chooses an insurance broker for insurance, and 0 otherwise.
<b>Reason for insurance</b>	Reference group - the insured prefers better professional ability and service.
Price	Dummy variable: 1 when the insured is concerned about price, and 0 otherwise.
Referral	Dummy variable: 1 if the insured chooses the insurer that is introduced by other firms, and 0 otherwise.
Self search	Dummy variable: 1 if the insured looks for an insurance firm by himself, and 0 otherwise.
Other	Dummy variable: 1 if the insured purchases insurance by other ways, and 0 otherwise.
<b>Company capital structure</b>	Reference group - the insured is a foreign firm.
Local firm	Dummy variable: 1 if the insured is a local firm; 0 if otherwise.
Joint venture	Dummy variable: 1 if the insured is a joint venture; 0 if otherwise.
<b>Scale of operation</b>	Reference group - the firm with an operating size below NT\$ 1 billion.
NT\$ 1.1 ~ 10 billion	Dummy variable: 1 if the operating size is between NT\$ 1.1 and 10 billion; 0 if otherwise.
NT\$ 10.1 billion above	Dummy variable: 1 if the operating size is above NT\$ 10.1 billion; 0 if otherwise.
<b>Company assets</b>	Reference group - the firm with total asset below NT\$ 1 billion.
NT\$ 1.1 ~ 10 billion	Dummy variable: 1 if total asset is between NT\$ 1.1 and 10 billion; 0 if otherwise.
NT\$ 10.1 billion above	Dummy variable: 1 if total asset is above NT\$ 10.1 billion; 0 if otherwise.
<b>Annual total premium</b>	Reference group - the firm with a total annual premium below NT\$0.1 million.
NT\$0.11~1 million	Dummy variable: 1 if the total premium is between NT\$0.11 and 1 million; 0 if otherwise.
NT\$1.01~10 million	Dummy variable: 1 if the total premium is between NT\$1.01 and 10 million; 0 if otherwise.
NT\$10.01 million above	Dummy variable: 1 if the total premium is above NT\$10.01 million; 0 if otherwise.
The exchange rate is approximately NT\$ 30.35 for US\$ 1 by the end of August 2017.	

financial status, service quality, and premium quotation for clients more objectively, and recommend proper insurance products to clients. However, in direct underwriting, such services are unavailable, because they sell for only one insurer. Thus, an insurance broker possesses an advantage over direct underwriting. For the reason of insurance, firms that value professional competence and service quality prefer an insurance broker, whereas firms that emphasize price prefer direct underwriting. This scenario reflects the difference in advantage between the two channels. Regarding capital structure, no considerable difference can be observed between the two channels. In addition, the bigger the operating scale, the more likely firms would choose an insurance broker, which may occur because the need for commercial insurance of large companies is more complicated. As such, additional insurance brokers' assistance is required. The same results are found in total assets and premium, in which firms having higher total assets and premium tend to choose insurance brokers.

## 5.2. Estimation Results

This study performed OLS regression analysis with the seven service indicators as dependent variables, and the insurance broker, as well as a number of firm-specific characteristics of top 1,000 enterprises, as independent variables. Results are shown in Table 3, in which Models 1 to 6 present the results of six consulting service variables, and Model 7 displays the result of renewal willingness for different channels.

In Model 1 to 6 in Table 3, the dependent variables are financial status and service consultation, consultation service for insurance need, premium consultation service, explanation service of policy clause, professional competence service, and additional service. Regression analysis shows that the relation between the majority of service indicators and the insurance broker is significantly positive at the highly significance level of 1%, except for explanation service of policy clause, which is positive at the significance level of 10%. This suggests that the top 1,000 enterprises felt that the insurance broker could offer improved consulting service compared with direct underwriting. This result corresponds to

the finding of Trigo-Gamarra (2008) and Eckardt & R athke-D oppner (2010). Therefore, the results support our first hypothesis. As regards other variables, such as reason for insurance, company capital, operating scale, total assets and premium, only a few variables have a significant relation with different service quality proxies. Model 7 in Table 3 shows that this study verifies whether the top 1,000 enterprises have greater willingness to renew contracts with the insurance broker after the policy expires. Regression analysis shows that the relation between the insurance broker and willingness to renew the contract is not significant. Such a result suggests that firms that purchase insurance

**Table 2:** Basic Statistics

Variable	Full sample		Insurance Broker		Direct Underwriting	
	Mean	SD	Mean	SD	Mean	SD
Insurance broker	0.563	0.497	1.000	0.000	0.000	0.000
Financial status and service quality consulting	5.05	1.428	5.41	1.207	4.58	1.554
Insurance need consulting service	5.63	1.069	5.83	1.025	5.38	1.078
Premium consulting service	5.12	1.669	5.77	1.363	4.28	1.659
Explanation of policy clause	5.54	1.140	5.67	1.123	5.37	1.145
Professional competence service	5.72	1.112	5.87	1.106	5.52	1.093
Additional service	5.12	1.300	5.40	1.229	4.77	1.307
Renewal willingness	4.67	1.462	4.73	1.427	4.60	1.510
Reason for insurance - price	0.535	0.500	0.514	0.502	0.561	0.499
Reason for insurance – referral	0.073	0.261	0.051	0.220	0.103	0.305
Reason for insurance – self search	0.131	0.338	0.087	0.283	0.187	0.392
Reason for insurance - other ways	0.029	0.167	0.043	0.205	0.009	0.097
Local firm	0.873	0.333	0.884	0.321	0.860	0.349
Joint venture or other	0.086	0.281	0.065	0.248	0.112	0.317
Operating scale NT\$ 1.1~10 billion	0.629	0.484	0.572	0.497	0.701	0.460
Operating scale NT\$ 10.1 billion above	0.208	0.407	0.297	0.459	0.093	0.292
Company assets NT\$ 1.1~10 billion	0.612	0.488	0.565	0.498	0.673	0.471
Company assets NT\$ 10.1 billion above	0.184	0.388	0.261	0.441	0.084	0.279
Annual total premium NT\$ 0.11~1 million	0.412	0.493	0.319	0.468	0.533	0.501
Annual total premium NT\$ 1.01~10 million	0.400	0.491	0.420	0.495	0.374	0.486
Annual total premium NT\$ 10.1 million above	0.155	0.363	0.225	0.419	0.065	0.248
<b>Sample size</b>	<b>245</b>		<b>138</b>		<b>107</b>	

Variables are defined in Table 1.

from the insurance broker do not have higher willingness to renew the contract, compared with those who purchase insurance from direct underwriters. Such a result implies that even if insurance brokers could offer better consulting service, a variety of factors continue to affect businesses' willingness to renew the contract. With respect to the reason for insurance, price consideration has a significant and negative

**Table 3:** Regression results for service quality and insurance broker (total samples)

Independent variable	Model 1	Model 2	Model 3	Model 4
	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)
Insurance broker	0.767*** (0.000)	0.384*** (0.008)	1.523*** (0.000)	0.268* (0.083)
Reason for insurance - price	-0.248 (0.166)	-0.082 (0.553)	-0.155 (0.440)	-0.089 (0.549)
Reason for insurance - referral	0.016 (0.963)	-0.058 (0.826)	-0.092 (0.810)	0.233 (0.412)
Reason for insurance – self search	0.027 (0.919)	-0.110 (0.590)	0.150 (0.611)	-0.254 (0.244)
Reason for insurance - other ways	0.637 (0.242)	0.203 (0.630)	0.690 (0.259)	0.365 (0.420)

Independent variable	Model 1	Model 2	Model 3	Model 4
	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)
Local firm	0.608 (0.181)	-0.069 (0.845)	0.539 (0.291)	-0.110 (0.770)
Joint venture or other	0.470 (0.388)	-0.173 (0.681)	0.883 (0.148)	-0.027 (0.953)
Operating scale NT\$ 1.1~10 billion	-0.202 (0.496)	0.199 (0.386)	-0.469 (0.159)	0.006 (0.979)
Operating scale NT\$ 10.1 billion above	-1.361*** (0.005)	-0.461 (0.212)	-0.898* (0.094)	-0.486 (0.220)
Company assets NT\$ 1.1~10 billion	0.137 (0.613)	-0.472** (0.026)	0.057 (0.852)	-0.270 (0.234)
Company assets NT\$ 10.1 billion above	0.659 (0.141)	-0.098 (0.778)	0.183 (0.715)	-0.229 (0.538)
Annual total premium NT\$ 0.11~1 million	-0.267 (0.594)	-0.360 (0.353)	-0.053 (0.924)	-0.691* (0.097)
Annual total premium NT\$ 1.01~10 million	-0.154 (0.761)	-0.149 (0.704)	-0.094 (0.868)	-0.560 (0.183)
Annual total premium NT\$ 10.01 million above	0.904* (0.056)	0.276 (0.559)	0.387 (0.571)	0.120 (0.813)
<b>Adj R<sup>2</sup></b>	<b>0.157</b>	<b>0.096</b>	<b>0.223</b>	<b>0.083</b>
<b>Sample size</b>	<b>245</b>	<b>245</b>	<b>245</b>	<b>245</b>

The dependent variables of Models 1, 2, 3, 4 are financial status and service quality consulting, Insurance need consulting service, premium consulting service and explanation of policy clause respectively. Note: \*\*\* indicates a significance level of 0.01; \*\* indicates a significance level of 0.05; \* indicates a significance level of 0.1.

relation with the willingness to renew contracts. Such a result suggests that premiums remain a main consideration for the top 1,000 enterprises when renewing the contract. Consequently, enterprises caring about price would possibly switch to direct underwriting even if insurance brokers could provide better service quality. By contrast, enterprises that emphasize service quality remain likely to choose an insurance broker when renewing a contract. This empirical result does not find a

**Table 3:** Regression results for service quality and insurance broker (total samples)

Independent variable	Model 5	Model 6	Model 7
	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)
Insurance broker	0.304*** (0.047)	0.557*** (0.001)	0.066 (0.734)
Reason for insurance - price	-0.040 (0.787)	-0.203 (0.222)	-0.705*** (0.000)
Reason for insurance - referral	0.165 (0.557)	0.420 (0.189)	-0.040 (0.912)
Reason for insurance – self search	-0.177 (0.411)	-0.176 (0.471)	-0.661** (0.017)
Reason for insurance – other ways	-0.166 (0.710)	0.077 (0.879)	-0.200 (0.727)
Local firm	-0.029 (0.937)	-0.049 (0.908)	0.679 (0.155)
Joint venture or other	0.002 (0.996)	0.174 (0.731)	0.704 (0.218)
Operating scale NT\$ 1.1~10 billion	0.178 (0.463)	-0.012 (0.966)	-0.506 (0.105)
Operating scale NT\$ 10.1 billion	-0.063 (0.872)	-0.750* (0.091)	0.198 (0.692)
Company assets NT\$ 1.1~10 billion	-0.195 (0.382)	-0.072 (0.776)	0.349 (0.222)
Company assets NT\$ 10.1 billion above	-0.063 (0.863)	0.439 (0.292)	0.185 (0.693)



Independent variable	Model 5	Model 6	Model 7
	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)
Annual total premium NT\$ 0.11~1 million	-0.249 (0.544)	-0.384 (0.410)	0.046 (0.931)
Annual total premium NT\$ 1.01~10 million	-0.419 (0.313)	-0.278 (0.555)	0.139 (0.793)
Annual total premium NT\$ 10.01 million above	0.186 (0.710)	0.459 (0.418)	-0.673 (0.293)
<b>Adj R<sup>2</sup></b>	<b>0.064</b>	<b>0.117</b>	<b>0.113</b>
<b>Sample size</b>	<b>245</b>	<b>245</b>	<b>245</b>

The dependent variables of Models 5, 6, 7 are professional competence service, additional service and renewal willingness respectively. Note: \*\*\* indicates a significance level of 0.01; \*\* indicates a significance level of 0.05; \* indicates a significance level of 0.1.

higher willingness for the top 1,000 enterprises, which purchase insurance from the insurance broker, to renew the contract with the original channel. Price concern might be essential when firms determine whether to renew a contract with the original channel. The finding does not support our second hypothesis.

### 5.3. Robustness Tests

In the prior section, we verify two hypotheses with 245 effective samples. Nevertheless, a question needs to be clarified. Considering that some enterprises may purchase insurance only from one channel and lack experience with other channels, perception on service quality may be biased when identifying whether significant differences exist in seven service variables between the insurance broker and direct underwriting. For example, companies that purchased insurance only via insurance brokers could have no way of comparing service quality of direct underwriting, and vice versa. To address this issue and understand whether the undertakers of top 1,000 enterprises could distinguish the difference in service quality of different channels, we added the question “Did you ever buy commercial insurance in different marketing channels and could you distinguish their difference in service quality?” to the questionnaire. Among the 245 effective samples, 153 had bought insurance in two different marketing channels, and could differentiate their service quality. We rerun regression analysis with the 153 samples. As shown in Models 1 to 7 of Table 4, results remain qualitatively identical. Therefore, our findings are robust.

### 5.4. Discussion

Our findings complement the past literature and provide important practical value to the property and liability insurance market in Taiwan. First, in 2005 and 2009, two property and liability insurers are insolvent, which adversely affected numerous clients. Since then, clients have been strongly motivated to search for financially healthy insurers. Such a situation is particularly relevant to the top 1,000 firms, because they are large entities. As such, consulting services offered by insurance brokers could help them choose a healthy insurer.

Second, after experiencing vicious price competition for many years, the property and liability insurance market in Taiwan is entering a profession-oriented era, which is characterized by commodity diversity, marketing multiplicity, and operational diversification. As a result, clients would demand services that are more professional in the face of a variety of insurance commodities and complicated marketing schemes. The top 1,000 firms can be expected to further rely on insurance brokers' consulting services in the future; commercial lines that they need are very complicated.

Finally, firms can enjoy premium discounts when they purchase insurance from direct underwriting after the authority's release regulated rates in the property and liability insurance market in Taiwan. Such a situation results in a higher premium for firms to purchase insurance via the insurance broker, which seriously undermines an insurance broker's competitiveness. However, if an insurance broker can offer improved service quality worthy of a higher premium payment, then an insurance broker can coexist with direct underwriting in the insurance market.

**Table 4:** Regression results for service quality and insurance broker (subsamples)

Independent variable	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>
	<i>Coefficient (p-value)</i>	<i>Coefficient (p-value)</i>	<i>Coefficient (p-value)</i>	<i>Coefficient (p-value)</i>
Insurance broker	0.809*** (0.001)	0.515** (0.010)	1.449*** (0.000)	0.365* (0.088)
Reason for insurance - price	-0.584*** (0.006)	-0.270** (0.126)	-0.411* (0.072)	-0.161 (0.398)
Reason for insurance - referral	-0.111 (0.817)	-0.376 (0.348)	0.052 (0.920)	0.027 (0.950)
Reason for insurance – self search	-0.101 (0.746)	-0.166 (0.528)	-0.061 (0.856)	-0.314 (0.270)
Reason for insurance - other ways	0.782 (0.434)	0.094 (0.855)	0.289 (0.663)	0.347 (0.534)
Local firm	-0.021 (0.970)	-0.221 (0.639)	-0.145 (0.811)	-0.311 (0.541)
Joint venture or other	0.124 (0.854)	-0.293 (0.604)	0.075 (0.918)	-0.199 (0.746)
Operating scale NT\$1.1~10 billion	-0.512 (0.173)	0.158 (0.616)	-0.432 (0.287)	0.171 (0.614)
Operating scale NT\$ 10.1 billion above	-1.210* (0.069)	-0.065 (0.907)	-0.668 (0.350)	0.554 (0.356)
Company assets NT\$ 1.1~10 billion	0.409 (0.237)	-0.481* (0.098)	0.312 (0.402)	-0.432 (0.168)
Company assets NT\$ 10.1 billion above	0.646 (0.326)	0.111 (0.840)	0.905 (0.202)	-0.877 (0.142)
Annual total premium NT\$ 0.11~1 million	-0.044 (0.935)	-0.067 (0.883)	0.274 (0.641)	-0.436 (0.378)
Annual total premium NT\$ 1.01~10 million	-0.246 (0.653)	-0.049 (0.914)	-0.082 (0.889)	-0.491 (0.322)
Annual total premium NT\$ 10.01 million above	0.485 (0.452)	-0.248 (0.646)	-0.096 (0.891)	-0.229 (0.696)
<b>Adj R<sup>2</sup></b>	<b>0.186</b>	<b>0.127</b>	<b>0.250</b>	<b>0.081</b>
<b>Sample size</b>	<b>153</b>	<b>153</b>	<b>153</b>	<b>153</b>

The dependent variables of Models 1, 2, 3, 4 are financial status and service quality consulting, Insurance need consulting service, premium consulting service and explanation of policy clause respectively. Note: \*\*\* indicates a significance level of 0.01; \*\* indicates a significance level of 0.05; \* indicates a significance level of 0.1.

## 6. Conclusion

This paper attempts to verify whether service quality differs across different marketing channels in Taiwan's commercial insurance markets by examining the perception of the top 1,000 firms on service quality. We split the marketing channels into direct underwriting and insurance broker, and observe whether a significant

**Table 4:** Regression results for service quality and insurance broker (subsamples)

Independent variable	<i>Model 5</i>	<i>Model 6</i>	<i>Model 7</i>
	<i>Coefficient (p-value)</i>	<i>Coefficient (p-value)</i>	<i>Coefficient (p-value)</i>
Insurance broker	0.599*** (0.005)	0.619*** (0.002)	-0.119 (0.668)
Reason for insurance - price	-0.158 (0.399)	-0.359** (0.041)	-0.835*** (0.001)
Reason for insurance - referral	-0.075 (0.859)	0.689 (0.189)	-0.361 (0.524)
Reason for insurance – self search	-0.293 (0.293)	-0.122 (0.399)	-0.850** (0.023)

Reason for insurance—other ways	-0.173 (0.753)	0.024 (0.993)	-0.429 (0.557)
Local firm	0.118 (0.813)	0.003 (0.745)	-0.019 (0.978)
Joint venture or other	0.124 (0.837)	0.194 (0.399)	-0.120 (0.881)
Operating scale NT\$ 1.1~10 billion	-0.152 (0.648)	-0.121 (0.919)	-0.405 (0.362)
Operating scale NT\$ 10.1 billion above	-0.371 (0.529)	-0.358 (0.541)	0.512 (0.514)
Company assets NT\$ 1.1~10 billion	-0.098 (0.750)	-0.018 (0.936)	0.378 (0.356)
Company assets NT\$ 10.1 billion above	0.389 (0.506)	0.428 (0.451)	0.482 (0.535)
Annual total premium NT\$ 0.11~1 million	0.156 (0.747)	-0.099 (0.963)	0.088 (0.891)
Annual total premium NT\$ 1.01~10 million	-0.233 (0.632)	-0.160 (0.991)	-0.128 (0.843)
Annual total premium NT\$10.01 million above	-0.052 (0.928)	-0.015 (0.912)	-1.023 (0.182)
<b>Adj R<sup>2</sup></b>	<b>0.110</b>	<b>0.110</b>	<b>0.149</b>
<b>Sample size</b>	<b>153</b>	<b>153</b>	<b>153</b>

The dependent variables of Models 5, 6, 7 are professional competence service, additional service and renewal willingness respectively. Note: \*\*\* indicates a significance level of 0.01; \*\* indicates a significance level of 0.05; \* indicates a significance level of 0.1.

difference exists between the two major channels in terms of consulting service and the willingness to renew the contract after the policy expires. Results show that the insurance broker perceives a significantly higher service quality in six input service indicators than direct underwriting. However, willingness to renew the contract from the original channel is not higher for the insurance broker, possibly because of price consideration. In other words, although the top 1,000 firms value professional ability and service quality of insurance brokers, they would still choose between professional service and price in terms of price consideration. As a result, firms that purchase commercial insurance via an insurance broker do not exhibit a higher willingness to renew the contract. Overall, we find mixed evidence for product quality hypothesis. Our findings support that the insurance broker dominates over direct underwriting in terms of consulting service. However, this is not the case in terms of renewal willingness due to price consideration.

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