

## Price-Risk Hedging of Thai Rubber Industries

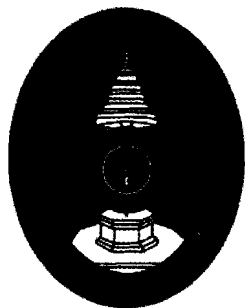
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### ABSTRACT

Based on producers' behavior, this study focussed primarily on probability to hedging decisions in futures market against the price risk of rubber entrepreneurs. Moreover, this study investigated the factors that influenced the hedging decisions of rubber entrepreneurs. A survey with a cross-sectional study was conducted. A sample of 80 entrepreneurs from natural rubber industries and rubber product industries was proportionally selected. A questionnaire, which was pre-tested and a high acceptable reliability was used. Descriptive and inferential statistics were performed to describe the respondents' profile and attitude, as well as to test the established hypotheses. The result showed that the respondents were non-futures usage more than futures usage groups. The variables including type of product, level of risk aversion and multi-attribute attitude were affected to hedging decisions in futures usage. It can be concluded that hedging decisions depend on multi-factors and also, it should be applied to investigate the factors affected price-risk hedging of other industries. It ought to survey on other group of population such as farmer, middleman, exporter, and consumer who utilize the similar marketing strategies.

**Key words:** Hedging decisions Futures usage Rubber Entrepreneur Behavior Psychological factors

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## การประกันความเสี่ยงราคา ของอุตสาหกรรมยางไทย

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### บทคัดย่อ

การซื้อขายยางพาราในยุคที่มีความเสี่ยงสูงจำเป็นต้องทราบปัจจัยที่เกี่ยวข้องกับการตัดสินใจประกันความเสี่ยงราคา การวิจัยเรื่องนี้จึงมีวัตถุประสงค์เพื่อศึกษาปัจจัยที่ทำให้ผู้ประกอบการยางพาราตัดสินใจประกันความเสี่ยงราคาในตลาดซื้อขายล่วงหน้า และเปรียบเทียบปัจจัยที่ส่งผลต่อการตัดสินใจประกันความเสี่ยงราคาระหว่างกลุ่มที่ใช้และไม่ใช้ตลาดซื้อขายล่วงหน้า การศึกษานี้ใช้การวิจัยเชิงสำรวจที่ศึกษา ณ ช่วงเวลาใดเวลาหนึ่ง โดยกลุ่มตัวอย่าง ได้แก่ ผู้ประกอบการยางพาราจากอุตสาหกรรมยางธรรมชาติ และอุตสาหกรรมผลิตภัณฑ์ยาง เป็นจำนวน 80 คน แบบสอบถาม ที่นำมาใช้ได้ผ่านการทดสอบก่อนใช้ และตรวจสอบค่าความเชื่อมั่น ที่ยอมรับได้ว่ามีค่าสูงเพียงพอที่ยอมรับได้ ส่วนการวิเคราะห์ข้อมูลอาศัยสถิติเชิงพรรณนา ได้แก่ ค่าร้อยละ ค่าเฉลี่ย และสถิติเชิงอ้างอิงด้วยการทดสอบสมมติฐาน โดยใช้  $t$  test เพื่อทดสอบความแตกต่าง ค่าเฉลี่ยของ 2 กลุ่ม ส่วนการทดสอบไคสแควร์ใช้ศึกษาความสัมพันธ์ของตัวแปรอิสระกับตัวแปรตามที่เป็นกลุ่ม ผลการวิจัยพบว่าผู้ตอบแบบสอบถามส่วนใหญ่เป็นผู้ไม่ใช้ตลาดซื้อขายล่วงหน้ามากกว่าผู้ใช้ตลาดซื้อขายล่วงหน้า ตัวแปร ได้แก่ รูปแบบสินค้าที่ผลิตของโรงงาน ระดับการหลีกเลี่ยงความเสี่ยง และทัศนคติที่หลากหลาย มีผลกระทบต่อการตัดสินใจใช้ตลาดซื้อขายล่วงหน้าของผู้ประกอบการยางพารา การวิจัยนี้สรุปได้ว่าการตัดสินใจประกันความเสี่ยงราคาขึ้นอยู่กับปัจจัยที่หลากหลาย และควรจะมีการตรวจสอบปัจจัยที่มีผลต่อการตัดสินใจประกันความเสี่ยงของอุตสาหกรรมอื่นๆ ด้วย นอกจากนี้ควรมีการสำรวจกลุ่มตัวอย่างอื่น ในช่องทางการตลาดเดียวกัน เช่น เกษตรกร พ่อค้าคนกลาง ผู้ส่งออก และผู้บริโภคเป็นสำคัญ

**คำสำคัญ :** การตัดสินใจประกันราคา การใช้ตลาดซื้อขายล่วงหน้า ยางพารา พฤติกรรมผู้ประกอบการ ปัจจัยทางจิตวิทยา



## Introduction

Rubber is major economic plant in the agricultural sector in terms of income for a long time. Rubber provides 137,605 million bahts in 2004 and has an important role to the lives and source of living of over 6 million rubber producers. Although Thailand is the largest natural rubber producing country, it has not been able to determine rubber price in the world market (1). To solve this problem, Thai government through the Ministry of Commerce had set up futures market and determined rubber as the first commodity to trade contract in 2004 (2). Hedging with futures market is a method for trading promises of future commodity deliveries among buyers and sellers. Futures contract is the tool to manage the risk due to price fluctuation (3). Moreover, it found out that there was quite a few numbers of contracts that have been traded for hedge against price risk on the futures market in Thailand (4). Therefore, we may expect the multi-attribute attitude factors that influence to hedging decisions of rubber entrepreneurs. However, it does not have answer for suspect the above. The study on hedging decisions in futures market of Thai rubber industries is the purpose of this investigation. In addition, this study focussed the effects of factors to hedging decisions between the futures usage and non-futures usage groups in rubber industries.

## Methods

This survey research served to investigate the factor affecting the hedging decisions in futures market of Thai rubber industries. The questionnaire elicited data from rubber entrepreneurs serve as representative of natural rubber factories and related rubber factories. The Thai rubber industry consists of about 415 producers, 161 natural rubber factories and 254 related rubber factories. A sample was randomly drawn from Thai rubber industries directories kept by the Thailand Rubber International Global Company. A total of 80 producers were interviewed. A personal interview was developed and 40 test interviews were conducted from other rubber entrepreneur groups not included in sample groups. The rubber entrepreneur interviews were conducted during June to August 2004.

The afore-mentioned questionnaire consisted of four parts. The first part asked five general information of respondent composed of gender, age, level of education, current position and experience. The second part asked six business background questions composed of number of the employees, factory status, type of factory, established time and type of products. The third part asked futures usage experience and information of hedging decisions in futures market in terms of nominal scale. The last part was confronted 28 questions with statements



about multi-attribute attitude of producers where the latter was measured on a five point scale with 1 equals strongly disagree to 5 equal strongly agree.

All the questionnaires collected carefully checked for their completeness. The data were then processed and analyzed through a computerized program of SPSS for Windows. Data analysis employed the background data of the rubber entrepreneur samples and described by using percentage and mean. In addition, data analysis to compare the futures usage and non-futures usage groups in terms of the factors contributing to hedging decisions by testing the correlation at 95 percent significant level was made. Using chi-square test was employed to find out the differentiation of arithmetic mean of firm and entrepreneur's characteristics.

## Results

By surveying 80 Thai rubber industries served as data for the validation of hypotheses and to assess factors that influenced the hedging decisions in futures market of rubber entrepreneurs, it was found that sixty percent of rubber entrepreneurs did not have futures usage and forty percent had futures usage. The futures usage's characteristics were 84.4 % male and 15.6 % were female. Ages of futures years old, 37.5 % were 46-60 years old, 12.5%

were 25-35 years old and 6.2% were more than 60 years. The levels of education composed of 68.8% were bachelor degree, 18.8% were diploma, 9.4% were master degree and 3.0% were high school. The current position consisted of 62.5% was manager, 25.0% was partnership and 12.5% was owner of rubber factories. Experience in the rubber industry included 50% was more than 20 years, 40.6% was 11-20 years and 9.4% was 5-10 years.

The non-futures usage's characteristics were 77.1% male and 22.9% were female. Ages of non-futures usage, 39.5% were 46-60 years old, 37.5% were 36-45 years old, 14.6% were 25- 35 years old and 8.4% were more than 60 years old. The levels of education consisted of 52.1% were bachelor degree, 18.8% were diploma, 18.7% were master degree, 6.2% were doctorate degree and 4.2% were high school. The current position included 50.0% was manager, 35.4% was owner and 14.6% was partnership of rubber industries. Experience in the rubber industry showed 48% was 11-20 years, 37.5% was more than 20 years and 14.5% was 5-10 years.

The factory profile of futures usage group composed of 90.6% was company limited and 9.4% was factory type for partnership Limited. Number of employees consisted of 53.1% was 101-500 persons, 40.6% was 50-100 persons



and 6.3% was less than 50 persons. Durations of factory established were 59.4% of 11-20 years, 21.9% were 5-10 years and 18.8% was more than 20 years. Company holder were 78.1% Thai Company and 21.9% was joint venture. Type of products showed 93.8% was natural rubber product and 6.2% was rubber related product.

The factory profiles of non-futures usage group were 95.8% company Limited and 4.2% was partnership Limited. Number of employees consisted of 52% was 51-100 persons, 29.2% was 101-500 persons, 14.6% was 501-1,000 persons and 4.2% was less than 50 persons. Durations of factory established were 60.4% of 11-20 years, 27.1% was more than 20 years and 12.5% was 5-10 years. Company holder characteristics were 72.9% was Thai Company, 14.6% was joint venture and 12.5% was foreign company. Types of products consisted of 64.6% natural rubber product and 35.4% was rubber related product.

The result analysis with chi-square showed that the type of product had a direct effect on hedging decisions in futures usage ( $p$  value less than 0.05). Another relationship testing with chi-square found that gender, level of education, ages, experience in the industry, factory type, number of employees, company holder and factory established affected hedging decisions in futures usage ( $p$  value more than 0.05). When comparison the level of risk aversion

and multi-attribute attitude between futures usage and non-futures usage Factors groups found that  $p$  value was less than 0.05.

## Discussion

This study showed that about forty percents of rubber entrepreneurs in Thailand had futures usage. The futures usage's profile, most of them was male and middle age. Half of them graduated bachelor degree and current position was manager of factory. Also, half of them had more than 20 years in the rubber industry experience. This finding is also consistent with previous research that high education might influence an increased hedging decisions in futures market (5-7). In addition, high rubber industry experience will be increased in futures usage (6,9).

The non-futures usage's profile, most of percentage was male with maturity between 46-60 years old. Half of them received bachelor degree and current position was manager in factory. Moreover, most of them had 11-20 years in the rubber industry experience. It can be suggested that owner who work more experience in rubber industry did not like to use futures market. This finding is similar with previous research that experience not determine to the using futures market (10).

The factory profile of futures usage group can be implication of finding that most of their factory type was company limited. Half of futures

usage group had number of employees between 101-500 persons. Factory established ranged between 11 and 20 years. Most of company holder's were Thai and type of products produced was natural rubber product. This finding can be suggested that natural rubber product such as ribbed smoked sheet (RSS), standard Thai rubber (STR) and latex concentrated always face with price fluctuation, therefore rubber entrepreneurs had futures usage for guarantee price and protect loss from uncertainty situation (12).

On the other hand, the firm profile of non-futures usage group had the characteristics of company limited. Most of non-futures usage group had number of employees between 51-100 persons, company holder was Thai company. More than half of non-futures usage group had factory established between 11-20 years and type of product produced was natural rubber product. This finding can be suggested that non-futures usage group did not like to hedge against price risk because they may lack of familiarity with trading, trading too risky, lack of understanding, not enough time to do a good job and morally wrong to use such tools (3, 11).

In addition, it was found that hedging decisions in futures usage depend on type of product that they produced. This finding can be suggested that natural rubber product has normally price fluctuation in the cash market.

But rubber related product such as tyres, shoes and gloves had only indirect affected from rubber price uncertainty, indicating that different types of products had different futures usage (13). The analysis showed that hedging decisions in futures usage did not depend on gender, level of education, ages, experience in the industry, factory type, number of employees, company holder and factory established. This can be explained that the diversities of characteristics always exist in all futures market traders (4).

This study showed that there was difference in level of risk aversion between futures usage and non-futures usage groups. This finding is consistent with previous study that anyone who has more risk aversion will likely to use hedge against price risk in futures usage than those who have no risk aversion (7). Also, it was found that there were differences in multi-attribute attitude such as risk attitude, entrepreneurial freedom, market orientation, perceived performance, risk perception, level of understanding and ease of use between futures usage and non-futures usage groups. The results from this investigation support previous studies that psychological factors such as risk attitude and risk perception were important factor for hedging decisions of entrepreneurs (8, 13, 15).

It can be concluded from this study that hedging decisions depend on multi-factors. Similar study should be applied to investigate



the factors affected price-risk hedging of other industries.

### Acknowledgement

The author is grateful for advice and comments of Professor Dr. Waykin Nopanitaya the Professional Associates of Thailand. Also, the author appreciates the insightful comments of Associate Professor Dr. Abdul Razak Chik.

This research is supported by the Commission of Higher Education, Ministry of Education.

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