

**FUKUBUKURO: VALUATION AND CHOICE EXPERIMENTS ON
SHROUDED AND BUNDLED GOODS**

A Dissertation

Submitted to the Faculty of the National Graduate Institute for Policy Studies (GRIPS)

in Partial Fulfillment of the Requirements for the Degree of

DOCTOR OF PHILOSOPHY IN PUBLIC ECONOMICS

By

Chaikal Nuryakin

March, 2015

ACKNOWLEDGEMENT

I would like to express a sincere appreciation of the National Graduate Institute of Policy Studies, at which I have had the opportunity to study. I would like to express my gratitude to the Mitsubishi Corporation, which has provided me with an excellent scholarship and the opportunity to study in Japan.

Particularly, I am much obliged to my supervisor, Prof. Alistair Munro, who has meticulously, along with great care and attention to detail, advised and motivated me to produce the final product. I am equally thankful towards my dissertation committee, Prof. DainnWie, Prof. Robert Veszteg, and Prof. Tetsushi Sonobe, for their useful comments and directions during the production of this thesis. Thank you for a professional editing service that help me with the English editing on the final product.

Finally, I would like to express my gratitude to Economics Department, Faculty of Economics, University of Indonesia, for partially funding the experiments. Last but not least, I am indebted to Alin Halimatussadiah and Jazman Ihsanudin for their superb assistance during experiments.

DEDICATION

To my parents, my wife, and sons

ABSTRACT

Chaikal Nuryakin

Main Advisor: Prof. Alistair Munro

March, 2015

Fukubukuro (or lucky bag) is a familiar retail institution in Japan and other countries for disposing unwanted stock during New Year sales. In fukubukuro, retailers bundle goods into bags. General information about the contents is provided, but details of brands and specifications are concealed. The success of fukubukuro as the seller's price discrimination tool depends on consumers' valuations of and risk preferences for buying fukubukuro. In this study, we conducted the following three laboratory experiments to investigate fukubukuro: two valuation experiments and one choice experiment.

The first experiment is a preliminary experiment that aims to provide a first glimpse on how consumers value product lotteries. In particular, we tested whether the attributes of bundling and concealing can raise consumers' willingness to pay (WTP). In the computer-based laboratory experiment, we used a Multiple Price List (MPL) procedure to elicit individuals' WTP for the products. In general, bundling and concealing do not raise subjects' WTP for (bundled) product lotteries. Nonetheless, as we also found some validity problems with subjects' valuations, e.g., the subjects' value bundled products significantly less than single products, we sought to address these problems in the second experiment.

The second experiment used the Becker-DeGroot-Marschak(BDM) approach to elicit individuals' WTP and risk preferences when dealing with deterministic product and product lotteries. In general, we found that uncertainty has a negative effect on subjects' WTP for a product lottery: they value the lottery less than the best outcome. Nevertheless, we found that many subjects are risk-seeking and optimistic, especially towards negatively skewed product lotteries. Furthermore, although subjects' WTP responses to bundled product lotteries are less heterogeneous than their responses to single product lotteries, there is no significant advantage of selling bundled product lotteries over single product lotteries in relation to subjects' risk preferences.

The third experiment is a hypothetical choice experiment that aims to investigate the effects of risk preference and product knowledge and familiarity on individuals' choice behaviors. We confronted subjects with three options: a certain product, its substitute, and a product lottery. We found that subjects who are risk-seeking or have less product knowledge and familiarity are more likely to choose a product lottery. Furthermore, subjects are more likely to choose a product lottery when the choice task consists of complex products rather than simple products. Finally, the valuation experiment reveals the significant effect of risk preference on subjects' risky choice behaviors, which suggests that subjects have consistent risk attitudes in the valuation and choice tasks.

CONTENTS

ACKNOWLEDGEMENT	II
DEDICATION	III
ABSTRACT	IV
CONTENTS	VI
LIST OF FIGURES	IX
LIST OF TABLES	X
CHAPTER 1 INTRODUCTION	1
1.1 What is Fukubukuro?	1
1.2 Research Significance.....	4
1.3 Research Contribution	7
1.4 Organization of Dissertation.....	9
References	10
CHAPTER 2 PRELIMINARY EXPERIMENT ON CONSUMERS' WTP FOR SHROUDED AND BUNDLED GOODS	13
2.1 Introduction	13
2.2 Scope and Definition	14
2.3 Research Questions and Hypotheses	15
2.4 Preliminary Empirical Investigation.....	16
2.4.1 Multiple Price List (MPL) Format.....	17
2.4.2 Design.....	18
2.4.3 Participants	22
2.4.4 Procedure	22
2.5 Experimental Validity.....	26
2.5.1 Technical Issues.....	26
2.5.2 Validity Test	28
2.6 Results and Discussion	34
2.6.1 Descriptive Analyses	34
2.6.2 Hypothesis Testing	35
2.6.3 Testing Additivity of Bundle Valuations (Bundling Effect)	36

2.6.4	Testing Lottery Effect.....	37
2.6.5	Testing Fukubukuro Effect.....	38
2.6.6	Determining Risk Preference for Buying Product Lotteries	39
2.6.7	Determining Risk Preference for Buying Bundled Product Lotteries.....	41
2.6.8	Summary.....	42
2.7	Monotonicity Violation and Heuristic Decision-Making.....	43
2.7.1	Examination of Monotonicity Violation	43
2.7.2	Examination of Subjects' Heuristic Decision-Making.....	46
2.8	Improving Internal Validity.....	47
	References	50
CHAPTER 3 FUKUBUKURO: AN EXPERIMENT ON CONSUMERS' WILLINGNESS TO PAY AND RISK PREFERENCES FOR SHROUDED AND BUNDLED GOODS		
		52
3.1	Introduction	52
3.2	Method and Design.....	54
3.2.1	Experimental Method	55
3.2.2	Experimental Design	56
3.3	Validity Test	59
3.3.1	Monotonicity and Preference Stability.....	61
3.4	Results	63
3.4.1	The Shape of Subjects' WTP functions and Distribution of Subjects' Risk Preferences.....	63
3.4.2	Optimism Effect and Bundling Role	64
3.4.3	Demand Curve.....	68
3.5	Concluding Remarks	68
	Reference.....	71
CHAPTER 4 FUKUBUKURO: AN EXPERIMENTAL INVESTIGATION OF RISKY CHOICE AND ITS DETERMINANTS.....		
		73
4.1	Introduction	73
4.2	Motivation	75
4.3	Experimental Design	75
4.4	Results	77

4.4.1 Determinant of Lottery Choice.....	79
4.5 Concluding Remarks	85
References	87
CHAPTER 5 CONCLUSION	89
5.1 Discussion.....	89
5.2 Policy Implication	91
5.3 Lessons Learned	93
5.4 Future Research	95
References	97
APPENDIX	

LIST OF FIGURES

Figure 1-1 Fukubukuro from Department Stores and Small Shop.....	2
Figure 1-2 Yodobashi Camera: Digital Compact Camera.....	3
Figure 1-3 Brand Retailer: Apple's Fukubukuro.....	4
Figure 2-1 Distribution of WTP Responses	36
Figure 3-1 Distribution of WTP Responses	61
Figure 4-1 Yodobashi Camera: Mirror-Less Digital Camera.....	73
Figure 4-2 Average of Subjects' Assessment Responses.....	80

LIST OF TABLES

Table 2-1 Product Categories and 17 Tasks	20
Table 2-2 Participants' Backgrounds	22
Table 2-3 Test on Picture Link Failure Effect.....	27
Table 2-4 Test on Session Restart Effect	28
Table 2-5 Test on Slow-Running Computers Effect	28
Table 2-6 Modes of WTP Responses	29
Table 2-7 Participants' Experiences with the Goods	30
Table 2-8 Test on Ordering Effect.....	31
Table 2-9 Test on Starting Point Bias.....	32
Table 2-10 Test on Monotonicity	33
Table 2-11 Descriptive Statistics.....	35
Table 2-12 Test on Bundling Effect	37
Table 2-13 Test on Lottery Effect (Individual Goods).....	38
Table 2-14 Test on Fukubukuro Effect	39
Table 2-15 Test on Risk-Neutral Preference for Buying Product Lotteries	40
Table 2-16 Test on Risk-Neutral Preference for Buying Bundled Product Lotteries	42
Table 3-1 Product Features and 15 Tasks.....	57
Table 3-2 Summary Statistics of Subjects' WTP Responses	60
Table 3-3 Test on Monotonicity (n=37)	62
Table 3-4 Test on Preference Stability (n=37)	62
Table 3-5 Risk Preferences for Single Lottery A1_A2 (n=37)	63
Table 3-6 Risk Preferences for Bundled Lottery A1B_A2B (n=37).....	64
Table 3-7 Number of Subjects who Value Lottery A1_A2 As Much As They Value Product A1 (n=37).....	65
Table 3-8 Number of Subjects who Value Bundled Lottery A1B_A2B As Much As They Value Product A1B (n=37)	65
Table 3-9 Test on the Optimism Effect on Lottery A1_A2 (n=37).....	66
Table 3-10 Test on the Optimism Effect on Bundled Lottery A1B_A2B (n=37).....	67
Table 4-1 Number of Subjects who Chose a Product Lottery	78
Table 4-2 Logistic Regression Test on Determinants of Lottery Choice	83

CHAPTER 1 INTRODUCTION

1.1 What is Fukubukuro?

It is New Year's in Japan, which means that it is time for fukubukuro. Fukubukuro, or lucky bag, is a familiar retail institution in Japan for disposing unwanted stock during New Year sales. Retailers, ranging from small shops to big department stores, sell fukubukuro with various kinds of products at various prices. In fukubukuro, retailers offer bags or boxes consisting of bundled products at substantially discounted prices. The main difference that distinguishes fukubukuro from any other New Year sales is that retailers sell random products in a closed box or bag.

Fukubukuro entails the kind of product and price uncertainty that may put the retailer's reputation at stake. Even a loyal customer would need some assurance a part from the retailer's reputation in buying fukubukuro. In fact, there are ways for consumers to know what to expect when buying fukubukuro. Since fukubukuro is a type of clearance sale, potential buyers may expect the products inside the box to be the remains of a regular sale. However, this would be an impractical expectation if consumers want to buy fukubukuro from the major retailers. Buying experience or updating the contents of the previous year's fukubukuro is most likely the best way for consumers to know what they are getting from buying fukubukuro (See Figure 1-1).¹

¹ On the internet, many people share their experiences of buying fukubukuro by posting photos of the products that they receive. Social media such as Twitter and Facebook have enhanced the quantity and the quality of such information.

Figure 1-1 Fukubukuro from Department Stores and Small Shop

	
<p>http://www.blaineanderin.com/2013/01/my-fukubukuro-the-luckiest-bag-in-nagoya/ Matsuzakaya, one of the largest department stores in Japan, sold this fukubukuro during the New Year of 2013. Could you guess what was inside this bag? It was cookies in 2011.</p>	<p>http://j-cul.com/fukubukuro-hadiah-tahun-baru-misterius-untuk-wanita-jepang/ Look at the shop, and then give me your best guess!</p>

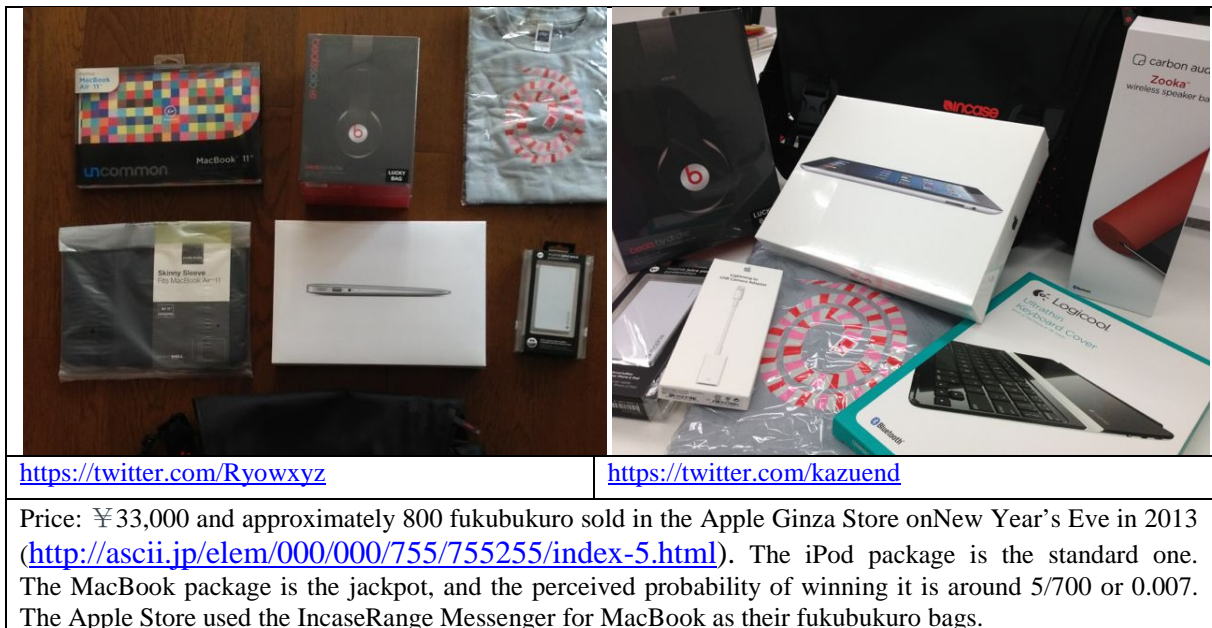
Nonetheless, Yodobashi Camera—one of the largest electronic chains in Japan—deliberately reduces the randomness of fukubukuro by classifying its bundles into narrower categories, such as cameras, notebook computers, and kitchen appliances. It further classifies camera fukubukuro into more specific categories that range from compact digital cameras to digital cameras with an interchangeable mirror lens. During the New Year in 2013, Yodobashi sold fukubukuro of compact digital cameras for 5,000 yen, which might have consisted of cameras from various brands, such as Sony and Nikon (see Figure1-2). Furthermore, every year, Yodobashi uses a special box for fukubukuro that is complemented with a printed picture of a prototype product that might provide hints of the kind of product that is inside the box.

Figure 1-2 Yodobashi Camera: Digital Compact Camera

<p>http://matome.naver.jp/odai/2135702388362861301/2135702704763267603</p>	<p>http://twitpic.com/brcag1</p>
<p>Price: ¥5,000 The picture of a camera printed on the box may give some hints of the contents of the fukubukuro (red circles in the figures).</p>	
<p>Content:</p> <ul style="list-style-type: none"> • Nikon Coolpix S4300 (¥7,000) • SanDisk Class10 8GB (¥800) • Camera pouch (¥500) • Bottle cap tripod (¥500) • Total value: ¥8,800 	<p>Content:</p> <ul style="list-style-type: none"> • Sony Cybershot DSC-WX50 (¥13,000) • SanDisk Class10 8GB (¥800) • Camera pouch (¥500) • Bottle cap tripod (¥500) • Total value: ¥14,800
<p>¥ = Japanese Yen</p>	

Meanwhile, fukubukuro sold by a brand retailer (e.g., Apple stores) may consist of (vertically) differentiated products. For instance, Apple’s fukubukuro may consist of a MacBook, an Ipad, or an Ipod, each with its own specific accessories (see Figure1-3). For the purposes of randomizing and, at times, concealing the jackpot prize, a brand retailer would not provide any fukubukuro-related information to consumers. Most of the time, the brand retailers use their products’ packaging in bag form as the fukubukuro boxes. Even the Apple stores used their MacBook accessory bags as their fukubukuro boxes during the New Year of 2013. The small shops and department stores, on the other hand, prefer to use a plainly colored box, usually in red, with the words “lucky bag” or the word “fukubukuro” (kanji) written on it, along with their store names.

Figure 1-3 Brand Retailer: Apple's Fukubukuro



In other cases, fukubukuro seems to have a general bundling feature across retailers: the bundle consists of a main product and its tie-in (accessories), which are complementary in most cases. For brand retailers especially, fukubukuro may consist of more than one main product (e.g., apparel) and more than one accessory product (e.g., hat). In addition, there are many cases in which the accessories are inferior or have relatively low value compared to the main product.

1.2 Research Significance

Nowadays, Japanese department stores have introduced fukubukuro to other countries, such as United States, Taiwan, Singapore, and Malaysia, through their foreign branches. Moreover, according to a private internet-based questionnaire conducted in January, 2010 by Goo Research,² 248 respondents out of 1,089 (or 22.8%) bought fukubukuro on

²<http://research.goo.ne.jp/index.html>.

New Year's Eve.³As a widespread event with over 100 years of history in the Japanese economy, fukubukuro, along with other clearance sales, may have a significant impact on consumers' welfare and the performance of the retail industry as a whole. Yet, it is astounding that very few studies, if not none, have been conducted to explore fukubukuro.

Why should shops bundle and shroud their goods? A voluminous amount of literatures in the fields of economics and marketing science has explored (multiproduct) bundling as a price discrimination tool and a self-selection mechanism to screen target customers (see Kobayashi, 2005). These literatures have highlighted the importance of the relation and correlation of consumers' preferences (WTP) to firms' decisions to bundle (Venkatesh and Mahajan, 2009). The general conclusion is that bundling reduces the heterogeneity of consumers' valuations, which enables sellers to extract a higher surplus from consumers.

On the other hand, shrouding is a practical way for sellers to randomize the goods received by buyers. When there is heterogeneous product quality, consumers may look for the "good" product first, so sellers would need to lower the price of the "bad" products in order to sell surplus stock. Fukubukuro is the retailers' response to this sequential search in sales. With fukubukuro, stores would not have to apply discounts to such a high degree because the expected quality of the last item sold would be the same as that of the first.

³A similar survey conducted in 2007 showed that a stable number of 239 respondents out of 1,186 (or 20.2%) bought fukubukuro during the New Year of 2007.

Furthermore, economists' interest in the use of randomization or the lottery as a screening tool over that of products has recently been growing (Thanassoulis, 2004; Pycia, 2006; Manelli and Vincent, 2006, 2007; and Pavlov, 2011).⁴ Thanassoulis (2004) showed that in some circumstances, the use of lottery results in an increase of the seller's profits. By offering product lotteries in the market or in intertemporal selling, sellers increase consumers' risk of not receiving a preferable good, which would allow sellers to segment consumers based on their risk attitudes. This risk acts as a screening device for sellers to discriminate the prices in each market segment. Therefore, the effectiveness of fukubukuro depends on consumers' valuations of and risk preferences for buying fukubukuro.

Nevertheless, we may argue that uncertainty may not always produce a negative effect on an individual's WTP for fukubukuro. As a New Year's tradition, fukubukuro is regarded as a festival activity, in which the pre-buying rituals are just as important as the purchase itself. For some individuals, fukubukuro may offer the pleasure of suspense from the moment of queuing for the purchase to the moment of unveiling the contents of the box (Caplin and Leahy, 2001). For the risk-averse consumer, even a tiny utility derived from the suspense of buying fukubukuro may alter her decision to choose a more risky option (Conlisk, 1993). In this case, individuals may not only overweight the probability of receiving a preferable product (Tversky and Kahneman, 1992), but also value fukubukuro as much as they may value the best product outcome (Goldsmith and Amir, 2010).

⁴ Such related concepts as "opaque selling" and "probabilistic selling" have been examined in marketing literature (see Fay, 2008; Jiang, 2007; Jerath et al., 2009; Jerath et al., 2010; Post, 2010; Anderson and Xie, 2012).

Finally, a further interesting fact is that fukubukuro, especially those from Yodobashi Camera, shrouds feature-rich electronic products, the feature information of which is essential for consumers to pick the best item among alternatives. An abundant amount of literatures has affirmed the positive roles of information and familiarity in consumers' buying decisions (Swaminathan, 2003). Yet, for the consumers, being well-informed or familiar with a product that they intend to buy may not be an easy task. First, searching for product information may be costly (Stigler, 1961), especially when an excessive amount of detailed information is necessary for the consumer to comprehend a feature-rich electronic product. Second, experience is sometimes necessary for the consumer to gain knowledge of a product's features and functions (Bruck, 1985). Third, even if the information is available and costless to obtain, the consumer may experience an *information overload* that may produce a reverse effect on his or her intentions to buy (Jacoby, 1984; Eppler and Mengis, 2004). Therefore, there are some circumstances in which less and simpler information is desirable and buying fukubukuro rather than one certain product is an optimal choice for the consumers.

1.3 Research Contribution

The main contribution of this thesis is its pioneering research on fukubukuro. The findings of our experiment should illuminate the needs of empirical studies to verify the theoretical foundations of the product lottery as a price discrimination tool and the theoretical investigation of fukubukuro as an allocation mechanism. Chapter 2 presents our preliminary experimental investigations of whether the attributes of bundling and concealing can raise consumers' WTP. The results suggest that bundling and concealing attributes cannot raise subjects' WTP, i.e., uncertainty has a negative effect on subjects'

WTP for product lotteries. It is important to note that we found validity problems in the results, especially in the area of subjects' non-monotonic preferences. The lesson learned is that subjects develop their understanding of the decision tasks and their consequences during the training session. Therefore, training sessions should be designed as a miniature of the experiment in which all representations of the decision tasks *plus* a practice of the implementation of the incentive compatibility mechanism (random drawing) are required for every subject based on his or her practice decisions.

Chapter 3 examines the effects of subjects' risk preferences and optimism on their purchases of a product lottery. Surprisingly, we found that many subjects are risk-seeking and optimistic, especially towards negatively skewed product lotteries. Thus, our results indicate that sellers may have the opportunity to gain more profit by selling fukubukuro. Finally, our results confirm that there is less heterogeneous WTP in the case of bundled product lotteries than in that of single product lotteries; however, in relation to risk preference, both single and bundled product lotteries produce similar benefits for sellers.

Chapter 4 is a hypothetical choice experiment that aims to investigate the roles of risk preference and information in individuals' choice behaviors. This chapter mainly focuses on Yodobashi Camera's fukubukuro, in which the goods and the probabilities of their receipt are perceived to be equal. This chapter suggests that subjects who are risk-seeking or have less information on and familiarity with the goods have a greater chance of choosing product lotteries. Finally, our regression analyses suggest that subjects have consistent risk attitudes in the valuation and choice tasks.

In sum, even though the experimental findings of this study may be somewhat limited, they provide the building blocks for future research on fukubukuro. We hope that this thesis proves to be a useful contribution to the fields of experimental economics and marketing research.

1.4 Organization of Dissertation

The remainder of this thesis is organized as follows. This introductory chapter is followed by discussions of a preliminary experiment that aims to investigate whether the attributes of bundling and concealing can raise consumers' WTP. In the third chapter, we focus more on the roles of risk preference and optimism in individuals' valuations of a product lottery. Chapter 4 investigates the roles of information and familiarity in individuals' risky choice behaviors. This chapter also examines whether individuals have consistent risk attitudes in the valuation and choice tasks. Finally, we offer our concluding remarks in Chapter 5.

References

Anderson, CK and Xie, X. (2012). "A Choice Based Dynamic Programming Approach for Setting Opaque Prices." *Production and Operations Management*, 21, 3, 590-605.

Bruck, M. (1985). "The effect of product class knowledge on information search behavior." *Journal of Consumer Research*, 12, 1, 1-6.

Caplin, Andrew and Leahy, John. (2001). "Psychological Expected Utility Theory and Anticipatory Feelings." *The Quarterly Journal of Economics*, 116, 1, 55-79.

Conlisk, John. (1993). "The Utility of Gambling." *Journal of Risk and Uncertainty*, 6, 255-275.

Eppler, J.M., and Mengis, J. (2004). "The concept of information overload: A review of literature from organization science, accounting, marketing, MIS, and related disciplines." *The Information Society*, 20, 325-344.

Gabaix, Xavier and David Laibson. (2006). "Shrouded Attributes, Consumer Myopia, And Information Suppression In Competitive Markets." *Quarterly Journal Economics* 121, 2, 505-540.

Goldsmith, K. and Amir, On. (2010). "Can Uncertainty Improve Promotion?" *Journal of Marketing Research*, December, 1070-1077.

J. Jacoby. (1984). "Perspectives on information overload." *Journal of Consumer Research*, 10, 4, 432-436.

- Jerath, K., Netessine, S., and S. Veeraraghavan. (2009). "Selling to strategic consumers: Opaque selling strategies." In S. Netessine and C. Tang, editors, *Consumer-Driven Demand and Operations Management Models*, 253–300.
- Jerath, K., Netessine, S., and S. Veeraraghavan. (2010). "Revenue management with strategic customers: Last-minute selling and opaque selling." *Management Science*, 56(3):430–448.
- Jiang, Y. (2007). "Price discrimination with opaque products." *Journal of Revenue and Pricing Management*, 6(2):118–134.
- Kobayashi, B. (2005). "Bundling By Firms? A Survey of the Economic Literature." *Journal of Competition Law & Economics*, 1, 4, 707-46.
- Manelli, A. M. and D. R. Vincent (2006). "Bundling as an Optimal Selling Mechanism for a Multiple-Good Monopolist," *Journal of Economic Theory* 127, 1 –35.
- Manelli, A. M. and D. R. Vincent (2007). "Multidimensional Mechanism Design: Revenue Maximization and the Multiple-Good Monopoly," *Journal of Economic Theory* 137, 153–185.
- Pavlov, G. (2011). "Optimal Mechanism for Selling Two Goods," *The B.E. Journal of Theoretical Economics: Advances*, 11, Issue 1, Article 3.
- Pycia, M. (2006). "Stochastic vs Deterministic Mechanisms in Multidimensional Screening," MIT.
- Shapiro, D., and Shi, X. (2008). "Market segmentation: The role of opaque travel agencies." *Journal of Economics and Management Strategy*, 17(4):803–837.

Stigler, George J. (1961). "The Economics of Information," *Journal of Political Economy*, 69, 3, 213–225.

Swaminathan,V. (2003). "The Impact of Recommendation agents on Consumer Evaluation and Choice: The Moderating Role of Category Risk, Product Complexity, and Consumer Knowledge." *Journal of Consumer Psychology*, 13, 1, 93-101.

Thanassoulis, J. (2004). "Haggling over substitutes," *Journal of Economic Theory* 117, 217–245.

Tversky, A. and Kahneman, D. (1992). "Advances in Prospect Theory: Cumulative Representation of Uncertainty." *Journal of Risk and Uncertainty*, 5, 297–323.

CHAPTER 2 PRELIMINARY EXPERIMENT ON CONSUMERS' WTP FOR SHROUDED AND BUNDLED GOODS

2.1 Introduction

In this chapter, we present an experimental investigation of whether the attributes of bundling and concealing can raise consumers' WTP. The standard theory suggests that uncertainty or risk will produce a negative effect on individuals' WTP. By concealing products, sellers increase consumers' risk of not receiving a preferable good. This means that an individual's WTP for product lotteries should never exceed his or her WTP for the most preferable product. In this study, however, we investigated the possibility that individuals may value product lotteries to the same degree as they may value the most preferable product; this is what is known as "the non-negative effect of uncertainty" (Goldsmith and Amir, 2010). In addition, we especially evaluated individuals' risk preferences to ascertain whether a considerable number of risk-seeking individuals buy product lotteries.

The effect of bundling on an individual's WTP has been widely studied and is further understood than the concealing (lottery) effect. Nevertheless, most bundling and lottery studies have been conducted exclusively on each product category. In light of the absence of a unified theory, a preliminary investigation of the valuations of bundled product lotteries becomes increasingly crucial. It is thus the primary objective of this chapter to determine whether the attributes of bundling and concealing can raise consumers' WTP.

2.2 Scope and Definition

In fukubukuro, sellers do not provide exact probability distributions of outcomes to the consumers as decision makers. This condition is known as ambiguity in decision theory literatures. The concept of ambiguity adequately portrays the dimension of uncertainty in fukubukuro because information on the attributes of potential outcomes and their probabilities could be made available by sellers. Such a practice may only be feasible for the sellers with established reputations. The lack of these reputations or any form of binding contracts compatible with our experimental design constrained our ability to completely mimic or mirror the fukubukuro environment. Subject to this limitation, we (operationally) defined fukubukuro as a bundled product lottery.

In doing so, we transferred fukubukuro from the domain of ambiguity⁵ to the domain of uncertainty. A further consequence of this definition is the reduction of the external validity of our experiment. Nevertheless, as we noted in the previous chapter, perceived probabilities of receiving the product, which are publicly shared through social media, are still available. Even for Yodobashi Camera, the perceived probabilities of the product outcomes of their fukubukuro are very similar from year to year. It lessens the condition of ambiguity in the buying of fukubukuro. This at least maintains the connection of our experiment to fukubukuro rather than to product lotteries.

We also limited our study focus to the effects of bundling and concealing attributes on consumers' WTP. For this purpose, we eliminated in our design any possible confounds that may influence subjects' WTP, such as the limited availability of time and quantity, selling frenzies, suspense, and conformity. In operational terms, we

⁵Frisch and Baron (1988) defined ambiguity as the uncertainty of probability created by the lack of information that is relevant and could be known.

tried to filter the following effects on consumers' WTP for fukubukuro: (1) bundling effect; (2) lottery effect; and (3) gross interaction effect, which we specifically termed as the "fukubukuro effect."

2.3 Research Questions and Hypotheses

The fundamental question addressed in this chapter is "Can the attributes of bundling and concealing raise consumers' WTP?" This question generated the following three main null hypotheses (Ho):

1. (Additive) Bundling effect⁶

Ho: WTP for bundled products = the sum of WTP for corresponding individual products

2. (Non-Negative) Lottery effect

Ho: WTP for a product lottery \geq the highest WTP for corresponding individual products

3. (Non-Negative) Fukubukuro effect

Ho: WTP for fukubukuro \geq the highest WTP for corresponding bundled products

Furthermore, we determined the subjects' risk preferences towards product lotteries and bundled product lotteries as follows:

4. Risk-neutral preference for a product lottery

⁶The value of a bundled good is a composite of the values of its individual components (items). In a cardinal sense, a consumer's WTP for a bundle is determined by the relationship between the consumer's WTP for each bundled item. The general term used in the bundling literature to describe the case in which the WTP for the bundle is higher (lower) than the sum of the WTP for its individual items is superadditivity (subadditivity).

Ho: WTP for a product lottery = expected value of WTP for corresponding individual products

5. Risk-neutral preference for a bundled product lottery

Ho: WTP for fukubukuro = expected value of WTP for all combinations of bundled products

2.4 Preliminary Empirical Investigation

Due to our interest in the value of individuals' WTP for private goods, we used real economic incentives to reveal subjects' valuations of the goods.⁷ The use of real economic incentives allows our experiment to apply a binding procedure, thereby obliging subjects to respond with truthful valuations. In this way, we had a valid instrument for testing the aforementioned hypotheses.

Technically, we adopted a simple laboratory experimental design by using a real dichotomous choice format. The dichotomous choice format is a direct method that simply asks respondents whether they would buy a product at a specific price. Related to our definition of fukubukuro, subjects in our experiment were asked to state their WTP for the (bundled) product lottery with combinations of fully specified products.

Recently, certain experimental economists have acknowledged that laboratory and field experiments complement one another (Harrison and List, 2004; Roth, 2008). Laboratory experiments allow researchers to test theoretical propositions or garner an understanding of general economics principals in controlled environments (Roth, 1998; Camerer, 2011). Despite the lack of external validity, the results of our laboratory

⁷ Revealed preference is a well-founded concept in economics, which makes it a more favorable valuation method for economists as opposed to stated preference.

experiments will provide some preliminary insight into how bundling and shrouding affect agents' economic decisions.⁸

2.4.1 Multiple Price List (MPL) Format

The extension of the real dichotomous choice format is the Multiple Price List Format (MPL). As described by Anderson et al. (2006), MPL confronts subjects with an array of ordered prices in a table (one per row) and asks them to indicate “yes” or “no” for each price. In our study, we employed MPL to elicit actual, rather than hypothetical WTP. Through a certain procedure to be discussed later, one decision is chosen for real. Once a decision has been chosen, the participant—depending on his or her choice—is in the midst of a real transaction that involves either buying the product or not. Through this method, we elicited actual WTP values for the products in the following four broad categories: individual products, product lotteries, bundled products, and bundled product lotteries.

Anderson et al. (2006) discussed several advantages and disadvantages of the MPL method. The advantages of MPL are that it is easy to implement and explain, and produces truthful responses from subjects. Subjects' responses to MPL are similar to the statements of their willingness or unwillingness to buy a product at each different price. If the chosen decision, which is randomly drawn by a subject, falls in the interval price in which she is willing to pay, then she pays the stated price and receives the good. It is in the subject's best interest to state “yes” if and only if the price is lower than her WTP. Randomization gives no incentive for the rational subjects to overstate or understate their WTP because doing so would be sub-optimal for them (Harrison, 2006).

⁸Camerer (2011) argued that external validity is only crucial for policy-based experiments.

Meanwhile, the disadvantage of MPL is that it only elicits interval responses. Another disadvantage is the potential for subjects to give inconsistent responses due to their ability to switch their answers from row to row, which would imply possibly inconsistent valuations. Further, the price list is susceptible to central tendency bias, meaning that subjects are drawn to the middle of the ordered table irrespective of their true values. Unfortunately, related literatures have only provided ways to identify central tendency bias rather than clear systematic solutions to counter it.⁹

For experiments using multiple products or multiple MPL tasks, the ordering of valuation tasks is also susceptible to an increase of the framing effect (Andersen et al., 2007). In a similar way, the subjects' valuations in our experiment are susceptible to the framing effect on the ordering of the valuation tasks of the four aforementioned product categories. We designed a computer-based laboratory experiment to minimize inconsistencies and the framing effect. By using Z-tree (Fischbacher, 2007), we developed a computer program that enables us to generate a unique random order of tasks for each subject and constrain the subjects from changing their valuations once they confirm their WTP for the (bundled) products.

2.4.2 Design

In our experiments, we employed a within-subject design (WS), in which each subject is exposed to varying random-ordered valuation tasks or elicitation scenarios. WS enables us to generate the individual simulated statistics of a subject's WTP for bundled products and (bundled) product lotteries, i.e., a summation and an expectation of the corresponding subject's WTP responses. In addition, a subject in WS is more compelled

⁹ One solution is to randomize the order of the price rows but this would add noise to the subjects' responses (Anderson et al., 2006).

to differentiate her WTP responses, and the process may resemble a real decision-making process as she observes various goods and prices, which would render this a more robust (internal) validity test. Therefore, WS provides a theoretical and practical basis for testing our hypotheses. This is not to mention that within analyses are statistically more efficient (Greenwald, 1976) and more cost-effective than a between-subject design (BS). For a limited number of subjects, WS will generate a significant amount of data, compared to BS.

Nevertheless, since each subject is exposed to all valuation tasks in WS, spurious effects (Charness et al., 2012) and fatigue effects (Stachtiaris et al., 2012) may be produced as a result. Spurious effects are similar to demand effects, in which subjects, consciously or not, change their behaviors according to experimenters' intentions. Tackling spurious effects is aligned to tackling the framing effect on the MPL design discussed earlier. Finally, in order to ease subjects' fatigue in our experiment, we designed automatically filled "yes/no" button responses in each valuation task; thus, subjects are not required to click the "yes/no" button for each price level (see an example of the MPL-decision table in the Appendix).

In particular, we applied a WS design on the WTP for the aforementioned product categories. The bundled products consist of two independent items: A and B. There are two types (brands) for each item: 1 and 2. Based on this scenario, we employed **seventeen** tasks or product features for item A and/or item B (Table 1).

We chose two types of correction tapes (A1, A2) and two types of staplers (B1, B2) as our experimental goods (see the pictures and product information of the goods in the Appendix). Stapler and correction tape are stationary goods that are regularly used

and needed by students. The two goods are independent goods or at least functionally independent, which is expected to neutralize the effect of the relation between bundled goods on subjects' WTP responses. The market price for the typical correction tape in Japan is approximately 220-280 yen, whereas for the typical stapler, it is approximately 460-520 yen.

Table 2-1 Product Categories and 17 Tasks

Individual Good A	
1	A1
2	A2
Lottery A	
3	A1_A2
Individual Good B	
4	B1
5	B2
Lottery B	
6	B1_B2
Bundle	
7	A1B1
8	A1B2
9	A2B1
10	A2B2

Bundled Lottery	
11	A1B1_A1B2
12	A2B1_A2B2
13	A1B1_A2B1
14	A1B2_A2B2
15	A1B1_A2B2
16	A1B2_A2B1
17	Fukubukuro

In order to minimize¹⁰ the effect of market price (Anderson et al., 2007; Harrison et al., 2004), specifically the field price censoring of 100-Yen shop products (similar to one-dollar shop in US), we conducted the experiment in Indonesia by using high quality Japanese products which are rarely available in the Indonesian market.¹¹ In Indonesia, the typical correction tapes would cost approximately Rp. 50,000-80,000,

¹⁰ We say "minimize" here because there are always outside alternatives (substitute goods) for our experimental goods that are commonly available in the market.

¹¹ A pre-test and one pilot experiment conducted at GRIPS that resulted in a severe 100-yen censoring price.

whereas the stapler would cost approximately Rp. 100,000-150,000 (1 yen is approximately equal to Rp. 100.00).

The MPL-dichotomous choice between option A and option B at each of the **twenty** price levels starts from Rp. 2,000 and increases by Rp. 2,000 increments. Option A states that “you pay nothing and receive nothing,” while option B states that “you pay ‘Rp. 2,000’ and receive ‘*the good*’” (see an example of the MPL in the Appendix). For their participation in the experiment, subjects received cash payment as compensation for their time and expenses (Rp. 100,000). The cash payment consists of four Rp. 20,000 notes, one Rp. 10,000 note, and five Rp. 2,000 notes. As part of the incentive compatibility mechanism, each participant has to draw a random number from two separate envelopes, each of which determines the tasks and the price levels that are for real. If the chosen task is a (bundled) product lottery, the participant draws a third number to determine the product that he or she would obtain.

We provided participants with a practice session that consists of four examples: individual goods, bundled goods, bundled product lotteries, and fukubukuro. Two review questions followed the practice session to test the participants’ understanding of the drawing procedures and the concept of a bundled product lottery. After the decisions session, we asked participants to complete a short survey on their demographic backgrounds and some follow-up questions on the products used in the experiment. Instructions for the participants were provided on each computer monitor and read by an experimenter during the experiment, except in the decisions session (screenshots of the instructions are available in the Appendix).

2.4.3 Participants

In total, 34 undergraduate students from the Faculty of Economics and Business, University of Indonesia participated in the experiment: 15 participants in the first session and 19 participants in the second session.

Table 2-2 Participants' Backgrounds

34 Students from the Faculty of Economics, University of Indonesia		
Gender		
Male	22	65%
Female	12	35%
Major		
Economics	14	41%
Management	4	12%
Accounting	16	47%

2.4.4 Procedure

Because of the limited space in the computer laboratory of the Economics Department, we conducted two separate sessions of the experiment on the same day on January 23rd 2013. Five days before the experiment, all registered students were informed to voluntarily choose between participating in the first session and the second session. Participants for the first session were required to arrive early in the morning while those for the second session were required to arrive 30 minutes before the experiment. There was no difference in cash compensation between the first and second sessions.

The first session was conducted in the morning (09:16-11:15 am) and the second was conducted in the afternoon (11:32 am-13:30 pm). Upon arrival, participants registered their names and took a random card to determine their seats. Each participant

was provided with a small bag for their (off) telecommunication devices with their card number attached and had to keep one small card for recording their outcomes. Participants for the second session had to arrive 30 minutes (11:00 am) before it started. After they registered their names and collected their (off) telecommunication devices, they were requested to enter the isolation room so that any contact and/or communication with the participants of the first session may be prevented.

The following steps form the structure of the experiment:¹²

1. General instructions
2. Payment of participation fee
3. Explanation of manually and randomly chosen decision tasks
4. Practice session
5. Review session
6. Goods inspection
7. Decision session
8. Outcomes session
9. Questionnaire
10. Payment and goods delivery

The outline of the activities is as follows:

1. Welcome

¹²Details of the procedures are available on the z-tree screen layout of the participants' instructions in the Appendix.

This consists of a welcoming thank-you note, instructions on silence during experiment, and an explanation of the manner through which questions may be asked during the experiment.

2. General instructions

This is a general description of what the participants will do in and receive (money and goods) from the experiment. It emphasizes participants' understanding that their outcomes are solely based on their own decisions.

3. Compensation payment

Participants receive cash money as compensation for their participation in the experiment.

4. Explanation of decision tasks

This consists of a more detailed explanation of the decision tasks: choosing between buying and not buying a product at various different prices. There are 17 decisions to be made on buying or not buying various products. In each decision, there are 20 questions on buying or not buying a specific product at 20 price levels.

5. Explanation of drawing procedures

This explains the exact procedures of the random selection of one of the participants' decisions as their real decision. Participants will be asked to draw a number (1-17) from an envelope for the decision that applies to them. After, they will draw another number (1-20) to determine the question that applies. If their actual choice is revealed to be a product lottery, they will draw a third number to determine the final outcome.

6. Practice

The practice session aims to acquaint participants with the decision tasks and the methods of establishing decisions on the computer interface. There are four practice trials, in which participants make the decision of buying or not buying for each of the following specific product categories: (1) single goods (book), (2) bundled goods (book and pen), (3) two-bundled product lotteries, and (4) four-bundled product lotteries (fukubukuro).

7. Review

There are two review questions. The first review question tests the participants' understanding of the drawing procedures, while the second examines their understanding of the concept of a bundled product lottery. After the completion of each review question, experimenters review the participants' answers one by one.

8. Goods presentation

While presenting the goods, the experimenters also demonstrate how to use the staplers (but not the correction tapes). Participants at their desks are given the opportunity to hold (but not use) the goods.

9. Circulation of product information sheets

This involves the distribution of product information sheets to each participant. Participants may use the information sheets during the decision tasks.

10. Decision tasks

There are 17 randomly ordered decision tasks for each participant.

11. Drawing process and recording of outcomes

This consists of the drawing process by participants and the recording of their outcomes (and the prices that they would have to pay).

12. Questionnaire

This involves a short questionnaire on participants' demographics and some follow-up questions on subjects' perceptions of the experimental goods.

13. Payment and goods delivery

Participants who have drawn a buying decision as their real outcome are called one by one to the delivery desk in order to pay and receive the product.

14. Data recording

As soon as the participants leave the room, the team of experimenters saves the recorded data from each computer onto a flash disk.

2.5 Experimental Validity

2.5.1 Technical Issues

During the experiment, six computers failed to display pictures on their screens (five computers in the first session and one computer in the second session). As a solution to this problem, we provided the participants with a printed version of the review questions (and they could also see these in focus on the monitor at the front of the class); the pictures used in the decisions session were available on the product information sheets.

There was one computer that suddenly shut down during the second session when the subject was already in the midst of the decisions session. We moved him to another computer quickly and allowed him to restart from the decisions session. We recorded all of the seat numbers that encountered technical problems so that we could identify any possible anomalies in their valuations. During the decisions session, twelve computers were running very slowly. However, we managed to start the outcomes session simultaneously for all subjects in both sessions.

The following passages demonstrate our analysis of whether the technical problems (picture link failure, session restart, and slow-running computers) significantly affect subjects' WTP responses. As the following model shows, we used panel data regression analyses with a dummy variable to conduct the estimates:

$$wtp_{it} = \alpha + \beta * dummy_i + \varepsilon$$

Where i (*individual*) = 1, ..., 34 and t (*productfeature*) = 1, ..., 17 . In this estimation, the dummy variable equals one for subjects with technical problems and zero for otherwise. Our general hypothesis is as follows:

Null hypothesis or Ho: $\beta = 0$ [non-existence of the technical problem effect]

Alternative hypothesis or Ha: $\beta \neq 0$ [existence of the technical problem effect]

Using fixed effect estimations, we obtained the results of the picture link failure effect (d_plf) on subjects' WTP responses, as shown in Table 2-3.

Table 2-3 Test on Picture Link Failure Effect

Variable	Coefficient	t-stat	P> t
constant	7.2353	283.84	0.000
d_plf	-1.6353	-9.43	0.000

The results show that d_plf is significantly different from zero. Thus, subjects whose computers had picture link failure have values of WTP that are significantly lower than those of others.

Using a similar estimation procedure, we analyzed the effect of session restart on a particular subject's WTP response. The results are shown in Table 2-4.

Table 2-4 Test on Session Restart Effect

Variable	Coefficient	t-stat	P> t
Constant	6.9982	839.17	0.000
<i>d_restart</i>	-0.1158	-0.41	0.688

As the results show that *d_restart* is not significantly different from zero, we may conclude that a session restart has no effect on the WTP responses of that particular subject.

Lastly, the test results of the effect of slow-running computers (*d_src*) on subjects' WTP responses were obtained, as shown in Table 2-5.

Table 2-5 Test on Slow-Running Computers Effect

Variable	Coefficient	t-stat	P> t
Constant	6.6551	132.90	0.000
<i>d_src</i>	0.9626	6.78	0.000

The results show that *d_src* is significantly different from zero; therefore, slow-running computers do indeed affect subjects' WTP responses. In general, we may conclude that the technical problems that occurred during the experiment have unintended effects on subjects' WTP responses.

2.5.2 Validity Test

In this section, we aim to address the following three issues: middle tendency bias, market price censoring, and the ordering effect. Furthermore, we maintain our economic approach in analyzing subjects' WTP for fukubukuro. As rational economic agents, subjects are assumed to have monotonic preferences, i.e., more is better than less.

Therefore, it is crucial to test this basic property of subjects' preferences in our experimental study.

2.5.2.1 Middle Tendency Bias and Market Price Censoring

In our MPL design, middle tendency bias exists if subjects' modes of WTP responses are centered on the 10th row or Rp. 20,000 in the array of ordered prices. Based on the modes of WTP responses in Table 2-6, it is easy to detect that subjects' WTP responses are not biased to the middle.

Table 2-6 Modes of WTP Responses

Products	Mode	Freq. of Mode
A1	4 (5)	7
A2	8 (4,5)	5
A1_A2	5 (4)	5
B1	4, 5, & 6	5
B2	5 (4)	5
B1_B2	4, 5, & 10	5
A1B1	3, 5, & 10	4
A1B2	3 & 12	4
A2B1	5 (8)	9
A2B2	5 (4,6)	8
A1B1_A1B2	4 (3)	5
A2B1_A2B2	5 (4)	7
A1B1_A2B1	5 (3,4)	6
A1B2_A2B2	2 (7, 8)	6
A1B1_A2B2	5, 6, & 10	4
A1B2_A2B1	5 (10)	6
fukubukuro	5 (4, 6, 7, 9)	5

Note: Modes in parentheses are the second most frequent.

Furthermore, our main purpose in conducting the experiment in Indonesia is to avoid the censoring of subjects' WTP responses by market price. Yet, external options or substitute goods are ubiquitous. We may argue that in some degree, price censoring must exist in any experiment that uses ordinary market goods. In light of this argument,

we carefully examined not only own-price censoring but also cross-price censoring in subjects' WTP responses.

The distribution of subjects' WTP responses for an individual good, especially for goods B1 and B2, is centered around the 5th row (mode) of price ordering.¹³ This means that the values of WTP for each product are very likely to be censored to Rp. 10,000.¹⁴ As discussed in the section on experimental design, good B is rarely available in the Indonesian market, and the price market of a similar type of good is approximately Rp. 100,000-150,000. In addition, the follow-up questionnaire also revealed that subjects are not familiar with good B (Table 2-7). Therefore, rather than price censoring, our data may be affected by price anchoring instead. Subjects' anchoring behaviors may also be reflected in the similarity of the modes of subjects' WTP responses across the products on the 5th row of price ordering.¹⁵

Table 2-7 Participants' Experiences with the Goods

Have seen the good prior to the experiment		
Good A1	18	53%
Good A2	7	21%
Good B1	2	6%
Good B2	1	3%
Have bought the good prior to the experiment		
Good A1	7	21%
Good A2	1	3%
Good B1	1	3%
Good B2	0	0%

¹³ We expected that good A would be more prone to market price censoring but curiously this is not the case.

¹⁴ Rp. 10,000 is the most prolific currency denomination in rupiah, which is similar to 100 yen in Japan. There are also stores with a similar concept as that of 100-Yen shops, which sell goods that range between Rp. 5,000 and Rp. 10,000.

¹⁵ Ariely et al. (2003) suggested that WTP may be sensitive to some arbitrary anchors, such as consumers' likely production of a range of acceptable values, rather than specific WTP values.

2.5.2.2 Ordering Effect

Although we randomized the order of valuation tasks, it is still possible that subjects' WTP for one product served as anchor for their subsequent WTP responses. In order to test the ordering effect, we used (panel data) regression analyses in the following model to conduct the estimates:

$$wtp_{it} = \alpha + \beta wtp_{it-1} + \varepsilon$$

where i (*individual*) = 1, ..., 34 and t (*sequence*) = 1, ..., 17. In this estimation, we used original sequence data, which were randomly generated for each subject by the computers in our experiment. Our hypothesis is as follows:

Ho $\beta = 0$ [non-existence of the ordering effect]

Ha: $\beta \neq 0$ [existence of the ordering effect]

Using panel data fixed effect estimations, we obtained the test results of the ordering effect, as shown in Table 2-8.

Table 2-8 Test on Ordering Effect

Variable	Coefficient	t-stat	P> t
constant	1.08365	4.14	0.001
wtp_{it-1}	.886738	23.31	0.000

As the results show that wtp_{it-1} is significantly different from zero, we may reject the null hypothesis of the non-existence of the ordering effect. The subject's WTP response is highly correlated with their previous WTP response. The fact that their WTP at sequence t is actually their WTP for various products suggests an anchoring behavior.

Furthermore, we conducted a test to determine whether starting point bias (from the first task) affects WTP responses. We ran regression analyses of subjects' WTP responses with their first WTP responses. The results are shown in Table 2-9.

Table 2-9 Test on Starting Point Bias

Variable	Coefficient	t-stat	P> t
constant	3.04646	11.27	0.000
<i>wtp(t=1)</i>	1.08448	15.34	0.000

The results show that the coefficient of the first WTP response is significantly different from zero. This suggests that subjects anchored their subsequent WTP responses to their first WTP responses.

2.5.2.3 Monotonicity

In this section, we demonstrate our analysis that determined whether subjects' preferences are strongly monotonic. A subject is deemed as having a strongly monotonic preference if she prefers bundled goods more than any of the individual goods in the bundle, i.e., if the WTP values for bundled goods are higher than those for any of the individual goods in the bundle.

In practice, based on a non-parametric matched pairs one-sided test (Wilcoxon signed-rank test), we tested for strong monotonicity between the median of subjects' WTP for a bundle, e.g., bundle A1B1, and the median of subjects' WTP for A_i and B_i . Our general hypotheses are as follows:

Ho: median of $A_i B_j - A_i = 0$ [preferences are not strongly monotonic]

Ha: median of $A_i B_j - A_i > 0$ [preferences are strongly monotonic]

and

H0: median of $A_i B_j - B_j = 0$ [preferences are not strongly monotonic]

Ha: median of $A_i B_j - B_j > 0$ [preferences are strongly monotonic]

where $i = 1, 2$ and $j = 1, 2$.

As shown in Table 2-10, the results of monotonicity were obtained by using matched pairs tests.

Table 2-10 Test on Monotonicity

Variable	Prob.	Conclusion
A1B1 vs. A1	0.2251	NSM
A1B1 vs. B1	0.2535	NSM
A1B2 vs. A1	0.8217	NSM
A1B2 vs. B2	0.6776	NSM
A2B1 vs. A2	0.4864	NSM
A2B1 vs. B1	1.0000	NSM
A2B2 vs. A2	0.8633	NSM
A2B2 vs. B2	0.2601	NSM

Note: NSM stands for “Not Strongly Monotonic” in terms of preferences.

All of the test results indicate that we should not reject the null hypothesis that subjects’ preferences are not strongly monotonic. Furthermore, the behavior of individual preference could be traced simply by comparing a subject’s WTP for the bundle to her WTP for the single product in the bundle. We found that a majority of subjects’ preferences are not strongly monotonic. Particularly, depending on the products, only 7-14 subjects have preferences that are strongly monotonic.

2.6 Results and Discussion

Most subjects in our experiment have non-monotonic preferences; hence, the results of our hypothesis testing on subjects' WTP responses may be controversial. However, descriptive analyses allow us to acquire a more comprehensive understanding of how the subjects made their decisions in our experiment. Given the subjects' decision-making processes, the inclusion of inferential statistics is still worthwhile since it may provide us with a general idea of subjects' WTP for fukubukuro.

2.6.1 Descriptive Analyses

Table 2-11 shows that for all products the mean of WTP is higher than its median, which implies that the distribution is right-skewed. For this reason, most of the subjects' WTP responses lie on the bottom half of the price levels (see Figure 2-1). Peculiarly, the similarity is discernible not only in the shape of WTP distribution but also in all of the statistics of the subjects' WTP (mean, median, standard deviation, minimum, and maximum). This suggests that the subjects did not comprehensively evaluate the specific and differentiated attributes of the products.¹⁶ It is possible that the subjects did not deliberately process the information or that the information itself is limited. Nonetheless, both may be induced by what is termed as "subjects' heuristic decision-making."

¹⁶In light of a characteristic of our subjects that is commonly known as "scope neglect," along with the violations of monotonicity, our subjects' behaviors peculiarly fit with the description of the "prototype heuristic" provided by Daniel Kahneman (2003).

Table 2-11 Descriptive Statistics

Statistics	A1	A2	A1_A2	B1	B2	B1_B2
Mean	7.18	6.68	7.50	6.97	7.38	7.26
Median	5.5	6.5	7	6	6	6.5
Std. Dev.	4.63	3.80	4.41	3.76	4.49	4.29
Min.	0	1	0	2	1	0
Max.	20	17	17	16	18	18

Std. Dev = standard deviation, Min = minimum, Max = maximum

Table 2-11 continued.

Statistics	A1B1	A1B2	A2B1	A2B2
Mean	6.44	7.38	6.91	6.65
Median	6	7	6	6
Std. Dev.	4.32	3.84	3.68	3.34
Min.	0	1	0	0
Max.	17	15	17	16

Std. Dev = standard deviation, Min = minimum, Max = maximum

Table 2-11 continued.

Statistics	A1B1_A1B2	A2B1_A2B2	A1B1_A2B1	A1B2_A2B2	A1B1_A2B2	A1B2_A2B1	f*
Mean	7.09	7.06	6.94	6.21	6.94	7.26	7.06
Median	6	5.5	5.5	6.5	6	7	6.5
Std. Dev.	4.40	3.95	4.16	3.89	3.95	4.29	3.48
Min.	1	1	1	0	0	0	1
Max.	17	17	18	16	17	17	16

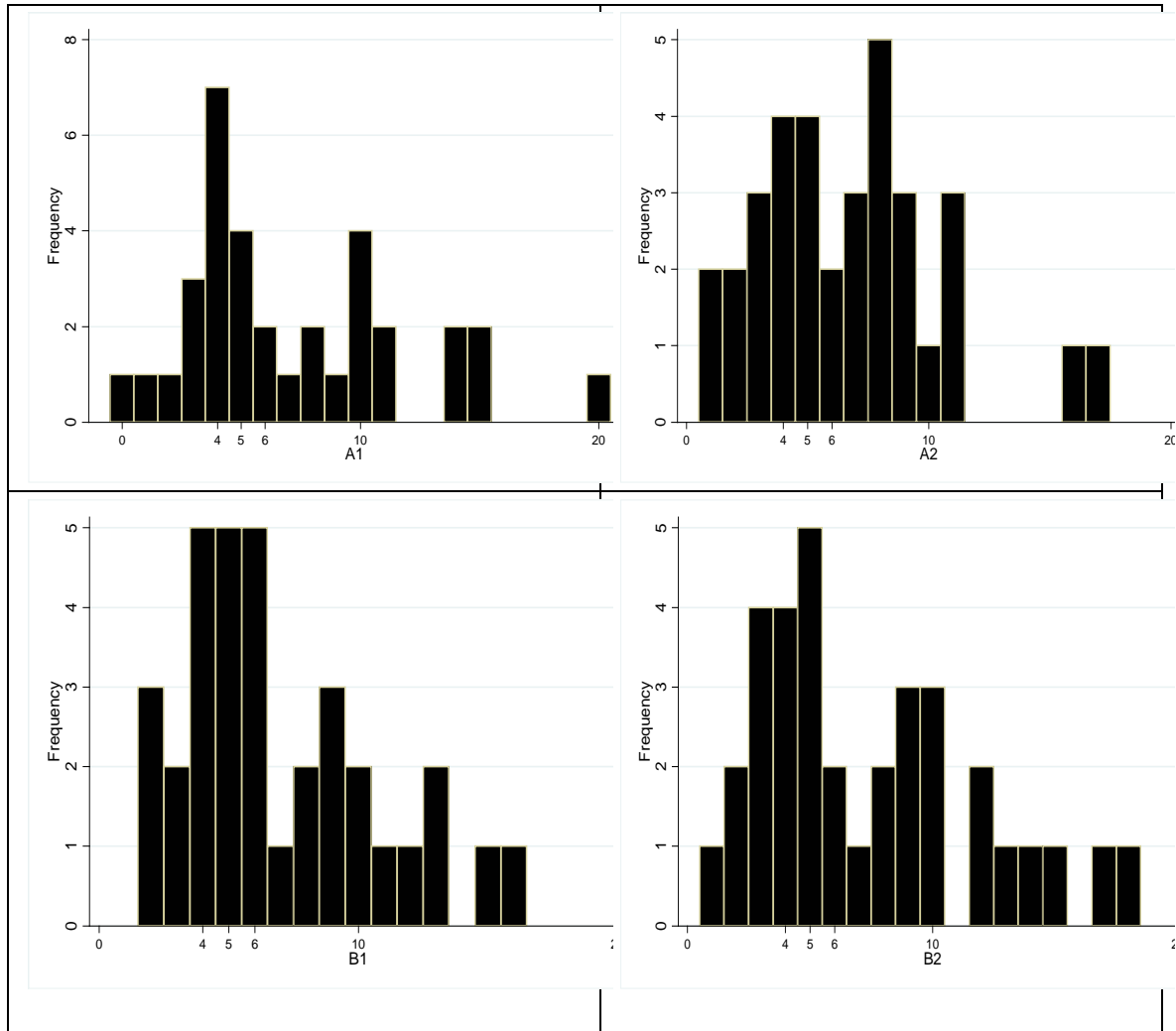
Std. Dev = standard deviation, Min = minimum, Max = maximum.

Note: *fukubukuro as a combination of all bundled product lotteries.

2.6.2 Hypothesis Testing

We conducted three sets of hypothesis testing by using the non-parametric matched pairs procedure (Wilcoxon signed-rank test) on the bundling effect, lottery effect, and fukubukuro effect. In doing so, we first generated (simulated) statistics of a subject's WTP for a bundle and a (bundled) product lottery, i.e., a summation and an expectation of the corresponding subject's WTP responses. The simulated statistic for the expected value of the (bundled) product lottery is a *simple average* of the corresponding subject's WTP.

Figure 2-1 Distribution of WTP Responses



2.6.3 Testing Additivity of Bundle Valuations (Bundling Effect)

Although the test on bundling effect is in fact a more general test on monotonicity, we would still like to know the exact bundling effect on subjects' WTP responses. The test is based on a matched pairs two-sided test between the median of subjects' WTP for a bundle, e.g., bundle A1B1, to the median of subjects' WTP for A1, together with their WTP for B1. Our general hypothesis is as follows:

Ho: median of WTP for $A_i B_j = A_i + B_j$ [bundle valuation is additive]

Ha: median of WTP for $A_i B_j \neq A_i + B_j$ [bundle valuation is non-additive]

where $i = 1, 2$ and $j = 1, 2$.

The test results are shown in Table 2-12.

Table 2-12 Test on Bundling Effect

Variable	N (-)	N (0)	Prob.	Conclusion
A1B1 vs. A1+B1	34	0	0.000	Non-additive
A1B2 vs. A1+B2	33	0	0.000	Non-additive
A2B1 vs. A2+B1	31	2	0.000	Non-additive
A2B2 vs. A2+B2	32	2	0.000	Non-additive

All of the test results indicate that we should reject the null hypothesis, which means that subjects' WTP for bundles is sub-additive. The result suggest that the bundling effect from any particular set of bundled products is strongly negative.

2.6.4 Testing Lottery Effect

The test on the non-negative lottery effect is based on a matched pairs one-sided test between the median of subjects' WTP for an individual product lottery, e.g., A1_A2, to the median of the highest values of subjects' WTP for A. The standard theory suggests that the lottery effect will be negative. Our general hypotheses are as follows:

Ho: median of WTP for lottery $A_i \geq$ median of the highest WTP for A_i [non-negative lottery effect on WTP for product A]

Ha: median of WTP for lottery $A_i <$ median of the highest WTP for A_i [negative lottery effect on WTP for product A], where $i = 1, 2$,

and

Ho: median of WTP for lottery $B_j \geq$ median of the highest WTP for B_j [non-negative lottery effect on WTP for product B]

Ha: median of WTP for lottery $B_j <$ median of the highest WTP for B_j [negative lottery effect on WTP for product B], where $j = 1, 2$.

The test results are shown in Table 2-13.

Table 2-13 Test on Lottery Effect (Individual Goods)

Variable	N (+)	N (0)	Prob.	Conclusion
A1_A2 vs. max(A)	11	6	0.098	SNLE
B1_B2 vs. max(B)	7	8	0.058	SNLE

Note: SNLE represents “Strongly Negative Lottery Effect.”

All of the test results indicate that we should reject the null hypothesis that there is a strongly negative lottery effect on subjects’ WTP for each product. This means that a product lottery is less preferable than the most preferable deterministic corresponding products. This result is compatible with standard theory.

2.6.5 Testing Fukubukuro Effect

We tested the non-negative fukubukuro effect based on a matched pairs one-sided test between the median of subjects’ WTP for a bundled product lottery (fukubukuro) to the median of the highest values of subjects’ WTP for the corresponding bundled products.

Our general hypotheses are as follows:

Ho: median of WTP for $A_i B_j _ A_m B_n \geq$ median of the highest WTP for $A_i B_j$ [non-negative fukubukuro effect on WTP for fukubukuro]

Ha: median of WTP for $A_i B_j _ A_m B_n <$ median of the highest WTP for $A_i B_j$ [negative fukubukuro effect on WTP for fukubukuro], where $i, m = 1, 2$ and $j, n = 1, 2$,

and

Ho: median of WTP for fukubukuro \geq median of the highest WTP for $A_i B_j$ [non-negative fukubukuro effect on WTP for fukubukuro]

Ha: median of WTP for fukubukuro $<$ median of the highest WTP for $A_i B_j$ [negative fukubukuro effect on WTP for fukubukuro], where $i = 1, 2$ and $j = 1, 2$.

The test results are shown in Table 2-14.

Table 2-14 Test on Fukubukuro Effect

Variable	N (+)	N (0)	Prob.	Conclusion
A1B1_A1B2 vs. E(A1B1_A1B2)	7	8	0.0115	SNFE
A2B1_A2B2 vs. E(A2B1_A2B2)	11	6	0.1497	WNFE
A1B1_A2B1 vs. E(A1B1_A2B1)	9	9	0.0638	SNFE
A1B2_A2B2 vs. E(A1B2_A2B2)	8	5	0.0014	WNFE
A1B1_A2B2 vs. E(A1B1_A2B2)	8	10	0.0731	SNFE
A1B2_A2B1 vs. E(A1B2_A2B1)	9	8	0.0619	SNFE
Fukubukuro vs. E(AB)	4	9	0.0002	SNFE

Note: W/SNFE stands for "Weak/ Strong Negative Fukubukuro Effect."

The test results indicate that we should reject the null hypothesis, which implies that there is a strongly negative fukubukuro effect. This means that a bundled product lottery is almost always less preferable than the most preferable deterministic corresponding bundled product lottery. Furthermore, there is indication that the lottery effect is stronger in the case of bundled product lotteries than in the case of single product lotteries.

2.6.6 Determining Risk Preference for Buying Product Lotteries

We tested for a risk-neutral preference for buying product lotteries based on a matched pairs one-sided test between the median of subjects' WTP for an individual product

lottery, e.g., A1_A2, to the median of expected values of subjects' WTP for A. Our general hypotheses are as follows:

Ho: median of WTP for lottery A_i = median of expected WTP for A_i [risk-neutral preference]

Ha: median of WTP for lottery A_i > median of expected WTP for A_i [risk-seeking preference], where $i = 1, 2$,

and

Ho: median of WTP for lottery B_j = median of expected WTP for B_j [risk-neutral preference]

Ha: median of WTP for lottery B_j > median of expected WTP for B_j [risk-seeking preference], where $j = 1, 2$.

The test results are shown in Table 2-15.

Table 2-15 Test on Risk-Neutral Preference for Buying Product Lotteries

Variable	N (+)	N (0)	Prob.	Conclusion
A1_A2 vs. E(A)	19	2	0.2650	RNP
B1_B2 vs. E(B)	16	5	0.6993	RNP

Note: RNP stands for "Risk-Neutral Preference."

Even though many subjects are risk-seeking, all of the test results indicate that we should not reject the null hypothesis that subjects on average are risk-neutral when buying product lotteries. In addition, there is insufficient evidence of a risk-seeking preference for product lottery A. In particular, 19 out of 34 subjects are risk-seeking

when buying product lotteries. Subjects who are more familiar with product A than with product B may contribute to the differential risk preferences for each product.

2.6.7 Determining Risk Preference for Buying Bundled Product Lotteries

We tested for a risk-neutral preference for buying bundled product lotteries based on a matched pairs one-sided test between the median of subjects' WTP for a bundled product lottery (fukubukuro) to the median of expected values of subjects' WTP for the corresponding bundled products. Our general hypotheses are as follows:

Ho: median of WTP for $A_i B_j - A_m B_n$ = median of expected WTP for $A_i B_j$ [risk-neutral preference]

Ha: median of WTP for $A_i B_j - A_m B_n$ > median of expected WTP for $A_i B_j$ [risk-seeking preference], where $i, j = 1, 2$ and $m, n = 1, 2$,

and

Ho: median of WTP for fukubukuro = median of expected WTP for $A_i B_j$ [risk-neutral preference]

Ha: median of WTP for fukubukuro > median of expected WTP for $A_i B_j$ [risk-seeking preference], where $i = 1, 2$ and $j = 1, 2$.

The test results are shown in Table 2-16.

Table 2-16 Test on Risk-Neutral Preference for Buying Bundled Product Lotteries

Variable	N (+)	N (0)	Prob.	Conclusion
A1B1_A1B2 vs. E(A1B1_A1B2)	19	3	0.4495	RNP
A2B1_A2B2 vs. E(A2B1_A2B2)	18	2	0.7512	RNP
A1B1_A2B1 vs. E(A1B1_A2B1)	18	4	0.3036	RNP
A1B2_A2B2 vs. E(A1B2_A2B2)	16	0	0.2170	RNP*
A1B1_A2B2 vs. E(A1B1_A2B2)	21	3	0.1146	RNP*
A1B2_A2B1 vs. E(A1B2_A2B1)	16	4	0.6620	RNP
Fukubukuro vs. E(AB)	24	0	0.2209	RNP*

Note: RNP represents "Risk-Neutral Preference."

*Weak Risk-Seeking Preference.

Similar to the results from the test on product lotteries, a majority of the subjects are risk-seeking. Yet, the test results indicate that we should not reject the null hypothesis that implies that subjects are risk-neutral when buying bundled product lotteries. In addition, there is an indication of a risk-seeking preference for buying some bundled product lotteries. Particularly, more than half of the subjects' WTP for all of the product features except A1B2_A2B2 are higher than their expected WTP values. This means that the majority of subjects are risk-seeking when buying bundled product lotteries. Furthermore, fukubukuro has the highest proportion of risk-seeking subjects (24 out of 34); however, as the magnitude of (positive) difference is relatively smaller than that of negative difference, the risk-seeking preference is weak.

2.6.8 Summary

Our preliminary experiment failed in most of the validity tests, especially the monotonicity test and the possibility of subjects' heuristic decision-making. Nevertheless, our results may at least offer a general idea of consumers' preferences for bundled product lotteries. The results are as follows:

1. Lotteries cannot raise consumers' WTP and the negative effect of lotteries is higher in the case of bundling.
2. Even though many subjects are risk-seeking, risk preferences across the subjects suggest an overall risk-neutral preference. Some results suggest a weak risk-seeking preference in subjects, especially in the case of bundled product lotteries.

The following sections discuss the possible causes of subjects' non-monotonic preferences and heuristic decision-making.

2.7 Monotonicity Violation and Heuristic Decision-Making

2.7.1 Examination of Monotonicity Violation

Why do most of the subjects (20-27 out of 34) value the individual components more than the bundle?¹⁷ We examined the two main aspects that may have induced such “irrational” behaviors: the incentive compatibility mechanism used in the experiment and the experimental products. In the literature, these two elements are critical in the design of a good contingent valuation method. Although some of our elaborations in this section may be speculative in nature due to the unavailability of supporting data, we at least discuss some possible measures for improving our experiment.

2.7.1.1 Incentive Compatibility

To apply the incentive compatibility mechanism, we used a drawing procedure in which subjects pick one decision randomly for implementation. In order to determine the real decision on price via a random mechanism, we used the following wording: “a second number will be randomly chosen to determine the question that would apply.” There

¹⁷ The aforementioned price anchoring to Rp. 8,000-12,000 may also have contributed to the subjects' non-monotonic preferences.

were many occasions in which the words “decision” and “question” were mentioned in sequence. Therefore, subjects may have been confused about the difference between “decision” and “question” and the connection between “question” and “price.” We admit that our practice sessions do not adequately allow the subjects to understand the consequences of their decisions since they lack exemplary executions of the drawing procedures.

Nevertheless, we provided review questions to determine subjects’ understanding of the procedures, and ten subjects indeed answered the questions wrongly. Although we conversed with each of the subjects to give them the correct understanding of the matter, they might still have been confused about the consequences of the drawing procedures for their outcomes. Based on our design, we did not give any guidance to the subjects or explicitly state that the best strategy for them to respond to the drawing procedure is to truthfully reveal their WTP.¹⁸

Another possible explanation is that our incentive compatibility mechanism is rather weak for the subjects to respond truthfully. Subjects might have perceived that the random mechanism is just a matter of luck. It is possible that subjects may have had a range of acceptable WTP values, rather than a specific WTP (Ariely et al., 2003), and Rp. 2,000 increments might not have been binding, especially when the goods may have seemed too trivial for them.

¹⁸This is a common practice in certain experiments, the objective of which is to elicit values rather than to test the subjects’ understanding of the dominant strategy property (Harrison et al., 2004).

2.7.1.2 Familiarity Issue

Subjects' familiarity with the products used in the experiment is one of the main concerns in any elicitation methods. As shown in Table 2-7, almost all of the subjects have never bought products A2 and B1, while all of the subjects have never bought product B2 before experiment. Furthermore, most of the participants have never seen product A2 and almost all have never seen products B1 and B2. For this reason, we conducted an inspection of goods session to allow the subjects to be more acquainted with the products.

In the inspection session, an experimenter introduced the products and presented the ways of using the stapler (but not the correction tapes) in front of the class. We circulated each type of goods to the subjects to allow them to merely hold the goods in their hands. We did not give subjects the opportunity to use the products by themselves due to our time limit. We provided subjects with product information sheets during the decisions session only. We believed that the inspection of goods session is sufficient for addressing the familiarity issue.

Furthermore, the familiarity issue may also be attached to the context in which the product is being valued. The randomization of products or bundled product lotteries used in the experimental design is novel for the subjects since the lottery is not a common practice in Indonesia. In dealing with this issue, we provided subjects with two examples of a bundled product lottery, and all of the subjects answered the review questions on this matter correctly.

2.7.2 Examination of Subjects' Heuristic Decision-Making

If subjects' decision-making is evidently heuristic, then what factors might have been responsible for such a behavior? Heuristic is a typical process used in an individual's decision-making under uncertainty. Note that there are at least three uncertain dimensions in our experiment: the product lottery, the drawing procedure, and the product value. Confronted with such a considerably uncertain environment, subjects might have taken a simple, easy, and fast way to solve their decision problems, i.e., by anchoring. In addition, some technical issues, such as slow-running computers, especially while performing all 17 decision tasks, might also have been responsible for the formation of such heuristic behaviors. Last but not least, our experimental design and its execution by the team of experimenters might have failed to establish in the subjects a clear and correct understanding of the procedure and the products used in the experiment.

Indeed, our findings so far would hardly be considered as novel in valuation studies. The complexity of our research should have pointed us to the importance of choosing proper products in our experimental design. The reason behind our choice of products that are "new" for the subjects derives from the results of a pre-testing experiment with common products: books and pens. In that experiment, the availability of books and pens (either single or bundled) at exactly equal prices at 100-Yen shops severely censored the WTP responses for all products (including bundles and lotteries). Based on this pre-test result, we drew the following conclusion that, in retrospect, may have been too broad: it is meaningless to measure bundling and lottery effects with ordinary products that are ubiquitous in the market.

2.8 Improving Internal Validity

In this section, we first list the factors that may have resulted in insensitivity to the scope of subjects' WTP responses in our experiment. These factors are as follows:

1. Unfamiliarity of the goods
2. Unbinding incentive compatibility mechanism
3. Exogenous budget constraints
4. "Not interested" effect
5. Heuristic decision-making
6. In general, a poorly executed survey design

We may conclude that most of the factors above are related to the experimental goods (1, 3, 4, and 5). Using products that are novel for the subjects proved to be more cumbersome to our study. As a survey design used for eliciting WTP responses for ordinary market commodities cannot be fully free from market price censoring, a more appropriate approach would be to accommodate this limitation in our design. Moreover, it is better to accommodate (controlled) market price censoring than to avoid it if in doing so we have systematic responses of WTP from subjects. In fact, we do have the possibility of doing so since regardless of products' market prices, we may still be able to isolate and measure the bundling and lottery effects on subjects' WTP. In addressing the objective of the present study, we are essentially looking for two distinct¹⁹ products, the characteristics of which are as follows:

1. Each product has various types, brands, or tastes.

¹⁹ Goods from the same category or with a common logical structure may be prone to scope neglect (Kahneman, 2003).

2. Each product has a standard price that is significantly different from the other's, and
3. Each product has never been sold in the forms of a bundle and a product lottery.

Factors 2, 5, and 6 are related to the incentive compatibility mechanism and the design of subjects' decision-making processes. There are at least three main integral parts in our incentive compatibility mechanism: (1) the practice, (2) the review questions, and (3) the drawing procedures. The following three suggestions for improving the compatibility of the incentive mechanism are worth consideration. First, a random drawing procedure could be simulated and executed in the practice session. Second, an explicit statement or guidance revealing the subjects' best strategy for responding to the drawing procedure—truthfully revealing their WTP—could be provided to the subjects. Third, the word “question” could be changed to “price,” since the latter may be easier to understand, especially for economics students. It may also reduce subjects' confusion between “decision” and “question.” The wording of “price” could be emphasized throughout the experiment, especially during the training session. Thus, we propose the use of Becker-DeGroot-Marschak (BDM) instead of MPL as the elicitation method in our next experiment.

Furthermore, in order to limit subjects' heuristic decision-making, we propose a two-stage decision-making process in every valuation task. At the first stage, the subject has to choose between buying and not buying a specific product. If she chooses not to buy the product, then she will proceed to the next decision; if she chooses to buy the product, then she will proceed to the price question. This procedure may induce the subject to think deliberately while deciding on her WTP.

Finally, the factors above seem independent, which accords with our employment of a within-subject design.²⁰ Therefore, in our improvement of the study methods, we aim to focus more on developing and integrating the above suggestions into our experimental design than on switching to a between-subject design. In addition, any split-sample procedure in which we assign subjects to different combinations of valuation tasks, e.g., single-fukubukuro, lottery-fukubukuro, and bundle-fukubukuro, may be possible, although not reliable for testing our hypotheses.²¹ Another alternative is to drastically change our experimental design from valuation to choice experiment. We applied all of these suggestions in our next experiment, the details of which are discussed in the following chapter.

²⁰ Based on the evaluability hypothesis of joint and separate evaluations (Hsee, 1996), a within-subject design is less prone to scope insensitivity or non-monotonic preferences compared to a between-subject design.

²¹ Different valuation tasks may have different “carry over” or “sensitization” effects (Greenwald, 1976); using the randomization of assignments as a control for these effects may not be sufficient.

References

- Anderson, S, Harrison, GW, Lau, MI & Rutström, EE. (2006). "Elicitation using multiple price list formats." *Experimental Economics*, 12, 3, 365-366.
- Andersen, S, Harrison, GW, Lau, MI & Rutström, EE. (2007). "Valuation Using Multiple Price List Formats." *Applied Economics*, 39, 4-6, 675-682.
- Ariely, D., G. Loewenstein and D. Prelec. (2003). "Coherent Arbitrariness": Stable Demand Curves without Stable Preferences, *Quarterly Journal of Economics*, 118, 1, 73–105.
- Camerer, Colin F., The Promise and Success of Lab-Field Generalizability in *Experimental Economics: A Critical Reply to Levitt and List* (December 30, 2011).
- Charness, G., Gneezy, U. and Kuhn, M. A. (2012). "Experimental methods: between-subject and within-subject design." *Journal of Economic Behavior & Organization*, 81, 1–8.
- Fischbacher, U. (2007). "z-Tree: Zurich toolbox for ready-made economic experiments," *Experimental Economics*, 10(2), 171-178.
- Frisch, D., and Baron, J. (1988). "Ambiguity and Rationality," *Journal of Behavioral Decision Making* 1,149-157.
- Goldsmith, K. and Amir, On. (2010). "Can Uncertainty Improve Promotion?" *Journal of Marketing Research*, December, 1070-1077.
- Greenwald, A., G. (1976). "Within-subjects designs: To use or not to use?" *Psychological Bulletin*, 83(2), 314-320.

Harrison, G.W., List, J.A. (2004). "Field experiments." *Journal of Economic Literature* 42, 1013–1059.

Harrison, G.W., R.M. Harstad and E.E. Rutström. (2004). "Experimental Methods and Elicitation of Values." *Experimental Economics*, 7, 2, 123-140.

Harrison, G. W. (2006). "Experimental evidence on alternative environmental valuation methods." *Environmental and Resource Economics*, 34, 125–61.

Kahneman, D. (2003). "Maps of Bounded Rationality: Psychology for Behavioral Economics." *The American Economic Review* 93, 5, 1449-1475.

Roth, A. E. (1988). "Laboratory Experimentation in Economics: A Methodological Overview," *Economic Journal*, 98, 974–1031.

CHAPTER 3 FUKUBUKURO: AN EXPERIMENT ON CONSUMERS' WILLINGNESS TO PAY AND RISK PREFERENCES FOR SHROUDED AND BUNDLED GOODS

3.1 Introduction

The literature on risky choice has provided overwhelming evidence that most individuals are risk-averse in monetary gambles. However, few studies have evaluated individual risk preferences in the context of goods or non-monetary prizes (e.g., Gneezy et al., 2006; Harrison et al., 2007).²² In accordance to the results of their counterpart studies, Gneezy et al. (2006), Harrison et al. (2007), and other researchers presumed that individuals are risk-averse and ignored the presence of a significant minority of risk-seeking individuals (Deck and Schlesinger, 2012). In regards to fukubukuro as a New Year sale, the presence of a significant minority of risk-seeking individuals may be sufficient for sellers to gain more profits from offering fukubukuro.

Nevertheless, we may argue that uncertainty may not always produce a negative effect on an individual's WTP for fukubukuro. As a New Year's tradition, fukubukuro is regarded as a festival activity, in which the pre-buying rituals are just as important as the purchase itself. For some individuals, fukubukuro may offer the pleasure of suspense from the moment of queuing for the purchase to the moment of unveiling the contents of the box (Caplin and Leahy, 2001). For the risk-averse consumer, even a tiny

²²Many studies have tried to replicate the study of Gneezy et al. (2006) in order to analyze what is known as "the uncertainty effect," in which individuals value a risky prospect less than its worst possible realization. For example, see Simonshon (2008), Newman and Mochon (2012), Keren and Williamson (2008), and Rydval et al. (2009).

utility derived from the suspense of buying fukubukuro may alter her decision to choose a more risky option (Conlisk, 1993). In this case, individuals may not only overweight the probability of receiving a more preferable product and underweight the probability of receiving a less preferable product (Hey, 1984; Tversky and Kahneman, 1992), they may also value fukubukuro as much as they may value the best product outcome (Goldsmith and Amir, 2010). In our study, we termed such demonstrations of the non-negative effect of uncertainty on individuals' WTP for product lotteries as "the optimism effect."

Compared to the optimism effect, the effect of bundling on individuals' WTP has been widely studied and is better understood. Thus, our main interest in the bundling effect is to document its role in individuals' risk preferences. In relation to fukubukuro, we expect that the number of risk-seeking individuals would be higher for bundled product lotteries than for single product lotteries. In our study, the concept of a bundled product lottery, the details of which will be discussed later, does not signify a bundle of two product lotteries, but rather a bundle of a product lottery and a certain product. In other words, we did not increase the degree of uncertainty or change the scale of the payoff; rather, we increased the scale of subjects' WTP for bundled product lotteries. By doing so, we focused our investigations on whether the scale of WTP affects individuals' risk attitudes.²³

Furthermore, we used a within-subject design to investigate both the bundle and the optimism effect at the individual level. This enabled us to determine whether the optimism effect is systematic and persistent along an individual's WTP functions or

²³The scale effect in this study is different from the well-known scale, or the incentive effect, in many risk aversion studies, in which the scale of the payoff of risky prospects is varied instead.

merely irregular or frail due to the individual's decision-making process.²⁴ Lastly, we evaluated whether a product lottery's market demand is larger or smaller than its weighted deterministic demand. If the market demand is larger than the weighted deterministic demand, then it is more profitable to offer product lotteries than to sell products in a deterministic way.

In summary, this chapter has the following practical aims: first, to document the shape of individuals' WTP functions for product lotteries; second, to analyze individuals' risk preferences and their distribution in buying bundled and single product lotteries; third, to ascertain the optimism effect on and the role of bundling in individuals' risk preferences; and fourth, to document the shape of the market demand for product lotteries and determine whether this demand is larger than the weighted deterministic demand for product lotteries.

3.2 Method and Design

As mentioned in the previous chapter, fukubukuro infuses uncertainty into products, the quality of which is guaranteed by the retailer's reputation. The lack of this reputation or any form of binding contracts compatible with our experimental design constrained our ability to completely mimic or mirror the fukubukuro environment. Subject to this limitation, we (operationally) defined fukubukuro as a bundled product lottery. We also eliminated in our design any possible confounds that may affect subjects' WTP for fukubukuro, such as limited availability of time and quantity, as well as selling frenzies.

²⁴ We did not exclude the possibility that a subject's frailty could merely be a natural error derived from the random tasks procedure. However, if most of our subjects have a systematic error, then we may attribute such an error to some structural cognitive process.

3.2.1 Experimental Method

We elicited individuals' WTP for deterministic products and product lotteries by using a two-stage closed-ended survey: first, we gauged the subject's interest in the product; second, we asked them to state their highest value of WTP for the product.²⁵ For each pair of products, we elicited WTP for seven lotteries, where p = the probability of receiving outcome 1, drawn from the following set: $\{0, 0.125, 0.25, 0.50, 0.75, 0.875, 1\}$.²⁶ The extreme cases $\{p = 0, p = 1\}$ represent the WTP for individual products. In doing so, we were able to locate one point on an individual's WTP for each probability scenario. For example, a subject's WTP at initial wealth y for a product lottery consisting of $wtp(p, 1 - p, A1, A2)$, a probability of the chance of receiving product A1 (p) and the chance of receiving product A2 ($1 - p$), is defined implicitly by

$$pu(A1, y - wtp_{A1}) + (1 - p)u(A2, y - wtp_{A2}) = u(0, y).$$

In total, we generated seven points from a subject's WTP functions: five points from a subject's WTP for a product lottery and two points from a subject's WTP for deterministic products.

²⁵We adopted a two-stage decision-making process due to psychological considerations: we expected subjects to think more cautiously about the second question asking for their WTP for a particular product, which is the main question in our design. This method is in general similar to the "cheap talk" used in many valuation studies.

²⁶In our task design, the probabilities of receiving the product are not represented by fractions but by the number of products in what we call the "lottery box." For example, in order to represent the probability of a 0.125 chance of receiving A1 and a 0.875 chance of receiving A2, we presented eight products in the lottery box that consists of one product of A1 and seven products of A2 (an example of the WTP task on the product lottery is available in the Appendix). Therefore, in this paper, it is more convenient for us to represent probabilities as ratios of goods rather than numerically. For example, a 1/7 lottery A1_A2 consists of a 0.125 chance of receiving A1 and a 0.875 chance of receiving A2.

We generated individuals' expected values of WTP for a product lottery based on probability scenarios and the subjects' WTP for product A1 [$wtp(1,0,A1,A2)$] and product A2 [$wtp(0,1,A1,A2)$]. For example, the expected value of $wtp(p,1-p,A1,A2)$ is defined by:

$$p * wtp(1,0,A1,A2) + (1 - p) * wtp(0,1,A1,A2).$$

The subject is considered risk-averse when her WTP for a product lottery is lower than the expected value of the lottery or when

$$p * wtp(1,0,A1,A2) + (1 - p) * wtp(0,1,A1,A2) > wtp(p,1-p,A1,A2).$$

For demand analyses, we generated the actual demand for deterministic products and product lotteries based on subjects' WTP responses. We ranked subjects' WTP for product in descending order and set the number of subjects as the quantity demanded. We further generated the weighted demand for product lotteries based on probabilities and the WTP for corresponding deterministic products. For example, the weighted demand curve for $p/1-p$ lottery A1_A2 is $p * demand\ for\ A1$ and $(1 - p) * demand\ for\ A2$. The larger the demand for lottery A1_A2, compared to its weighted demand, the more profitable it is to sell the product lottery than both products in a deterministic way.

3.2.2 Experimental Design

We employed a within-subject design (WS), in which each subject is exposed to varying *random-ordered* valuation tasks or elicitation scenarios. WS enabled us to generate individuals' expected WTP for a (bundled) product lottery. In addition, subjects in WS are more compelled to differentiate their WTP responses; as this may resemble a real

decision-making process while he or she observes various goods, it allows a more robust (internal) validity test. For these reasons, we used WS as the theoretical and practical basis of our evaluations of individuals' WTP functions and risk preferences.

In particular, we designed within-subject WTP tasks in the following four product categories: single products, single product lotteries, bundled products, and bundled product lotteries. The bundled products consist of two independent items: A and B. There are two brands for items A, A1, and A2, and only one for item B. We assigned five different prospects to lottery A1_A2 and bundled lottery A1B_A2B: 1/7, 1/3, 1/1, 3/1, and 7/1. Thus, we employed **fifteen** valuation tasks in our experiment (Table 3-1).

Table 3-1 Product Features and 15 Tasks

Task	Product Category	Scenario
1	A1	Deterministic
2	A2	Deterministic
3	B	Deterministic
4-8	Lottery A1_A2	1/7 1/3 1/1 3/1 7/1
9	A1B	Deterministic
10	A2B	Deterministic
11-15	Lottery A1B_A2B	1/7 1/3 1/1 3/1 7/1

For our experimental goods, we chose a Frixion pen as good A1, Surari pens as good A2, and Kit Kat Green Tea as good B (see the pictures and product information of the goods in the Appendix). Pen is a stationary product that is regularly used and needed by students. We expected subjects to have a higher valuation of the Frixion pen than the Surari pen. The two goods in the bundle (A1 and B or A2 and B) are independent goods or at least functionally independent, which is expected to neutralize the effect of the

relation between bundled goods on subjects' WTP responses. The market price for atypical pen in Japan is approximately 90-180 yen, while it is approximately 220-300 yen for a typical Kit Kat Green Tea.

In order to minimize²⁷ the effect of market price (Anderson et al., 2007; Harrison et al., 2004), specifically the field price censoring of 100-Yen shop products (which are similar to the one-dollar shop products in the US), we conducted the experiment in Indonesia by using high quality Japanese products that are rarely available in the Indonesian market. In Indonesia, atypical pen would cost approximately Rp. 10,000-50,000, while a typical Kit Kat Green Tea would cost approximately Rp. 100,000. We asked the subjects to state their WTP for a given product in the range of Rp. 0-40,000 in the multiplication of 1,000.

To apply the incentive compatibility mechanism, one task and one price were randomly chosen for real. In particular, each subject drew one (table tennis) ball from two separate urns, "task urn" and "price urn," to determine the task and the price that would be for real. The task urn consisted of balls numbered 1 to 15, whereas the price urn consisted of 40 balls numbered 1,000 to 40,000 in 1,000 multiplications. If the chosen task were a (bundled) product lottery, subjects drew the third ball from the "product urn" to determine the product that he or she would receive.

We provided subjects with a practice session consisting of four examples: an individual good (mechanical pencil), bundled goods (mechanical pencil and eraser), a 1/1 product lottery (mechanical pencil or ordinary pencil), and a 1/7 bundled product lottery (mechanical pencil and eraser or ordinary pencil and eraser). Two review

²⁷ See note 10.

questions followed the practice session to test the subjects' understanding of the drawing procedure and the concept of a product lottery. Before the decisions session, we gave subjects the opportunity to use the pens and taste the Kit Kat and supplied them with product information sheets during the decisions session. Furthermore, we asked subjects to complete a short survey on their demographic backgrounds and some follow-up questions on the products used in the experiment after the completion of all their decision tasks. Except for the decision sessions, instructions were provided on each computer monitor and read by an experimenter throughout the experiment (see the screenshots of the instructions in the Appendix).

3.3 Validity Test

We conducted two consecutive sessions of a laboratory experiment with 38 students ($n_1=21$ and $n_2=17$) at the Department of Economics, University of Indonesia, Depok, West Java, Indonesia on March 10th 2014. There are 22 males and 16 females; most of them are first- and second-year students (25). All subjects had taken at least one introductory economics course. Each session lasted for 90 minutes. We asked the subjects of the second session to come before the completion of the first session and quarantined them to ensure that no information would be leaked from the first session subjects to the second session subjects. Subjects received Rp. 100,000 (approximately US \$8) as cash reward for their time and participation.

We conducted two review questions after the training session to verify subjects' understanding of the procedure of randomly choosing the decision that would be implemented for real and the concept of a product lottery (see the screenshots of the instructions in the Appendix). Nine subjects answered wrongly to the first review

question but none did so to the second review question. We conversed with each of the subjects to give them the correct understanding of the matter. Furthermore, we gave them guidance or explicitly stated that the best strategy for them to respond to the price-drawing procedure is to truthfully reveal their WTP.²⁸

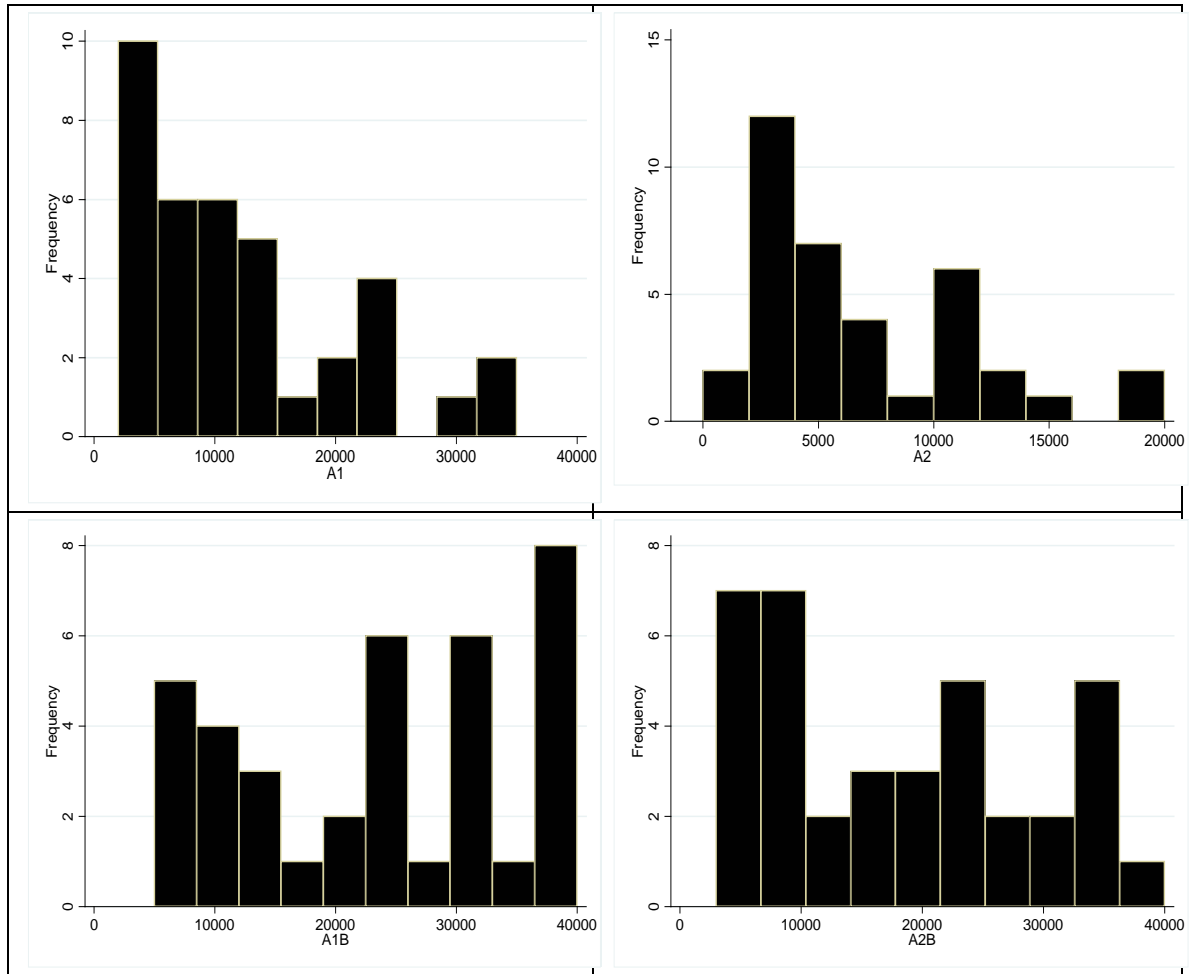
Table 3-2 summarizes the descriptive statistics of subjects' WTP responses. It shows that the mean of subjects' WTP for individual products A1, A2, and A2B is higher than their median, which implies that the distribution is right-skewed. Meanwhile, the distribution of subjects' WTP for bundled product A1B is left-skewed. Thus, most of the subjects' WTP responses lie on the bottom half of the price levels for A1, A2, and AB and the bottom half of the price levels for A1B (Figure 3-1).

Table 3-2 Summary Statistics of Subjects' WTP Responses

Good	Mean	Median	Standard deviation	Coefficient variation	N
Frixion Pen (A1)	12,837.84	10,000.00	9,060.03	0.71	37
Surari Pen (A2)	6,378.38	5,000.00	4,889.62	0.77	37
1/7 lottery of A1_A2	7,594.60	5,000.00	5,484.62	0.72	37
1/3 lottery of A1_A2	9,054.05	5,000.00	8,051.73	0.89	37
1/1 lottery of A1_A2	9,135.14	8,000.00	5,841.24	0.64	37
3/1 lottery of A1_A2	10,972.97	10,000.00	7,819.09	0.71	37
7/1 lottery of A1_A2	11,891.89	10,000.00	8,265.67	0.70	37
Kit Kat (B)	17,081.08	14,000.00	10,209.96	0.60	37
Frixion and Kit Kat (A1B)	23,594.59	25,000.00	11,802.68	0.50	37
Surari and Kit Kat (A2B)	18,324.32	15,000.00	11,239.94	0.61	37
1/7 bundled lottery of A1B_A2B	17,756.76	15,000.00	9,816.10	0.55	37
1/3 bundled lottery of A1B_A2B	18,540.54	17,000.00	10,746.04	0.58	37
1/1 bundled lottery of A1B_A2B	19,648.65	20,000.00	10,822.34	0.55	37
3/1 bundled lottery of A1B_A2B	21,756.76	22,000.00	10,620.75	0.49	37
7/1 bundled lottery of A1B_A2B	22,162.16	24,000.00	11,487.95	0.52	37

²⁸ See note 18.

Figure 3-1 Distribution of WTP Responses



3.3.1 Monotonicity and Preference Stability

It is important to note that all of the following statistical tests used non-parametric matched pairs one-sided test (Wilcoxon signed-rank test). With this method, we determined whether subjects have monotonic and stable preferences for products A1 and A2 and bundled products A1B and A2B. The subject is deemed as having a strongly monotonic preference if she prefers a bundled good more than any of the individual goods in the bundle, i.e., if the WTP values for a bundled good are higher than those for any of the individual goods in the bundle. Meanwhile, the subject is deemed as having a

stable preference for single and bundled goods if she prefers A1 over A2 and then A1B over A2B.

We excluded one subject from the analyses (n=37) due to her zero valuations for all products. Table 3-3 provides the results of the monotonicity test for bundle A1B, bundle A2B, and their corresponding products. The results indicate that subjects have strongly monotonic preferences for A1B—A1, A1B—B, and A2B—A2 but weakly monotonic preferences for A1B—B.

Table 3-3 Test on Monotonicity (n=37)

Variable	N (+)	N (0)	Prob.	Conclusion
A1B vs. A1	35	2	0.0000	SM
A1B vs. B	27	3	0.0002	SM
A2B vs. A2	36	1	0.0000	SM
A2B vs. B	20	4	0.2291	WSM

Note: (+) the value of the bundle is higher than the value of the individual goods. W/SM represents “Weak/Strong Monotonic Preference.”

Table 3-4 provides the results of subjects’ preferences for A1—A2 and A1B—A2B. The first result suggests that A1 is preferred over A2 across subjects, whereas the second result confirms a consistent preference for A1B over A2B. Thus, both results suggest that subjects have a stable preference for single and bundled goods.

Table 3-4 Test on Preference Stability (n=37)

Variable	N (+)	N (0)	Prob.	Conclusion
A1 vs. A2	26	5	0.0000	$A1 \geq A2$
A1B vs. A2B	26	5	0.0005	$A1B \geq A2B$

3.4 Results

3.4.1 The Shape of Subjects' WTP functions and Distribution of Subjects' Risk Preferences

We evaluated subjects' risk preferences for 1/1 lottery A1_A2, 1/1 bundled lottery A1B and A2B, and all prospects in general (1/7, 1/3, 1/1, 3/, and 7/1). We classified subjects as having a specific risk preference if at least three of her five WTP function points are directed to that specific risk preference. As complementary to the two classification methods, the Wilcoxon test was conducted to account for the rank in magnitude of the difference between a subject's WTP and its expected value at each point of a probability. Table 3-5 shows that, in the values for lottery A1_A2, there is no common tendency across subjects to have a specific risk preference. Furthermore, two subjects have an S-shape WTP function, which means that they were underweighting the small probabilities and overweighting the high probabilities of receiving A1 (see subjects' WTP functions in the Appendix).

Table 3-5 Risk Preferences for Single Lottery A1_A2 (n=37)

Risk Preference	Based on		
	1/1	3 out of 5	Wilcoxon
Risk-Averse	15	15	8
Risk-Neutral	8	7	24
Risk-Seeking	14	12	5
S-Shape	--	3	-
Undetermined	--	-	-

Table 3-6 shows subjects' risk preferences for bundled lottery A1B_A2B. We found the results of the curvature of subjects' WTP functions and risk preferences for bundled lottery A1B_A2B to be similar to those for lottery A1_A2. Furthermore, in

terms of subjects' WTP functions for lottery A1_A2 and bundled lottery A1B and A2B, we did not find any in the form of an inverse S-shape, as proposed by prospect theory. Some subjects overweighed the small probabilities and underweighted the high probabilities for both lotteries, but none of their WTP functions are in an inverse S-shape (see the subjects' WTP functions in the Appendix).

Table 3-6 Risk Preferences for Bundled Lottery A1B_A2B (n=37)

Risk Preference	Based on		
	1/1	3 out of 5	Wilcoxon
Risk-Averse	17	16	10
Risk-Neutral	8	4	20
Risk-Seeking	12	13	7
S-Shape	--	--	-
Undetermined	--	4	-

In relation to fukubukuro, both Tables 3-5 and 3-6 show that a considerable number of subjects are risk-seeking when buying lottery A1_A2 and bundled lottery A1B_A2B. Furthermore, the number of risk-seeking individuals in bundled lottery A1B_A2B is not more frequent than the number of risk seeking individuals in lottery A1_A2. Although this supports the argument of offering fukubukuro instead of selling products in a deterministic way, it does not suggest any additional beneficial effects from bundling on the distribution of risk-seeking individuals.

3.4.2 Optimism Effect and Bundling Role

In this sub-section, we discuss our analysis of the presence of the optimism effect or then on-negative effect of uncertainty on subjects' WTP responses. In practice, we tested whether a subject's WTP for lottery A1_A2 is higher or equal to her WTP for

product A1.²⁹ We found that a significant number of subjects' WTP values for lottery A1_A2 are as high as their WTP values for A1 (see Table 3-7). Table 3-8 shows subjects' WTP for bundled lottery A1B_A2B. We found the following stylized fact that is similar to our findings on single product lotteries: a significant number of subjects' WTP values for bundled lottery A1B_A2B are as high as their WTP values for A1B. Furthermore, for both single and bundled product lotteries, a majority of the subjects value 7/1 lottery A1_A2 (A1B_A2B) as much as they value A1 (A1B), suggesting the presence of the optimism effect on subjects' WTP for product lotteries.

Table 3-7 Number of Subjects who Value Lottery A1_A2 As Much As They Value Product A1 (n=37)

Lottery A1_A2	\geq A1
1/7	7
1/3	10
1/1	10
3/1	16
7/1	23

Table 3-8 Number of Subjects who Value Bundled Lottery A1B_A2B As Much As They Value Product A1B (n=37)

Bundled Lottery A1B_A2B	\geq A1B
1:7	9
1:3	10
1:1	14
3:1	18
7:1	18

²⁹ It is important to note here that one subject preferred A2 over A1 and A2B over A1B, while five subjects preferred A1 over A2 but preferred A2B over A1B. For the first subject, we reversed her WTP response for A1 into A2 and that for A1B into A2B. For the other five subjects, we reversed their WTP responses for A1B into A2B.

We then tested the presence of the optimism effect on subjects' WTP for lottery A1_A2. Our hypothesis is as follows:

Ho: median of lottery A1_A2 \geq median of A1 [optimism effect on subjects' WTP for product lottery A1_A2]

Ha: median of lottery A1_A2 $<$ median of A1 [no optimism effect on subjects' WTP for product A1_A2]

It is important to note that the above null hypothesis (Ho) is not rejected if the value of z-statistic is positive.

The results of the test are shown in Table 3-9.

Table 3-9 Test on the Optimism Effect on Lottery A1_A2 (n=37)

Variable	Prospect	N (+)	N (0)	Z-stat	Conclusion
A1_A2 vs. A1	1/7	3	4	-4.779	NOE
	1/3	6	4	-3.946	NOE
	1/1	6	4	-3.554	NOE
	3/1	4	12	-3.202	NOE
	7/1	10	13	-0.936	OE

Note: (N)LE represents "(No) Optimism Effect."

Most of the test results show that subjects' WTP values for lottery A1_A2 are less than their WTP values for product A1. We may conclude in general that there is no optimism effect on buying product lotteries. However, as the results of 7/1 lottery A1_A2 confirm the presence of the optimism effect, we may say that uncertainty has a non-negative effect on subjects' WTP at this specific point of WTP functions.

In the following section, we present the process and results of a similar test on bundled lottery A1B_A2B. Our hypothesis for the optimism effect on subjects' WTP for this bundled lottery is as follows:

Ho: median of bundled lottery A1B_A2B \geq median of A1B [optimism effect on subjects' WTP for bundled lottery A1B_A2B]

Ha: median of bundled lottery A1B_A2B $<$ median of A1B [no optimism effect on subjects' WTP for bundled lottery A1B_A2B]

The test results for each probability scenario are shown in Table 3-10.

Table 3-10 Test on the Optimism Effect on Bundled Lottery A1B_A2B (n=37)

Variable	Prospect	N (+)	N (0)	Z-stat	Conclusion
A1B_A2B vs. A1B	1/7	2	7	-4.744	NOE
	1/3	1	9	-4.748	NOE
	1/1	7	7	-3.289	NOE
	3/1	8	10	-2.030	NOE
	7/1	6	12	-2.625	NOE

Note: NLE represents "No Optimism Effect."

Again, our rejection of the null hypothesis means that there is no optimism effect on subjects' WTP for bundled lottery A1B_A2B. Even though more subjects value bundled lottery A1B_A2B as much as they value A1B compared to lottery A1_A2, there is no optimism effect on all prospects of the bundled product lottery. As we mentioned earlier, although we expected the optimism effect to be stronger in the case of bundling, the reverse is true, especially for a specific 7/1 lottery: bundling seems to weaken the optimism effect. This suggests that the higher the scale of WTP, the more negatively the subjects will tend to perceive uncertainty. This is not to say that bundling alters subjects' risk preferences or changes the distribution of risk-averse subjects in the

sample; rather, this suggests that bundling possibly affects a higher degree of risk preference in subjects, such as prudence or skewness preference.³⁰

3.4.3 Demand Curve

Lastly, we compared the product lottery's demand curve with its weighted (deterministic) demand to determine whether selling products by lottery or in a deterministic way is more profitable. The estimated demand curve for lottery A1_A2 suggests a significant difference in the actual and expected demand curves for 3/1 lottery A1_A2 and 7/1 lottery A1_A2 (see estimated demand curves in the Appendix). On the other hand, in terms of bundled product lotteries, the significant difference is only for 7/1 bundled lottery A1B_A2B. Both results suggest that negatively skewed product lotteries consistently produce larger demands than their weighted deterministic demands. In other words, selling negatively skewed product lotteries may produce higher profits for sellers than selling products in a deterministic way, since optimistic individuals may value a product lottery more highly than its expected value.

3.5 Concluding Remarks

Risk preference studies have very seldom been conducted in the context of non-monetary prizes. Our study filled this gap in the empirical studies by conducting within-subject experiments on individuals' WTP and risk preferences for lotteries of pens and Kit Kats. In general, our experimental results suggest that uncertainty has a negative effect on subjects' WTP. Yet, we found that many subjects are risk-seeking and optimistic when buying product lotteries. Furthermore, the optimism effect is robust in

³⁰ Skewness preference can be evaluated with two methods: first, by estimating the skewness parameter from a specific expected utility function and second, by running a choice experiment. We performed the second one in our following study.

negatively skewed product lotteries, and there is no significant difference between single and bundled product lotteries (see the demand curves in the Appendix).

In relation to fukubukuro, the fact that a considerable number of risk-seeking subjects buy product lotteries supports the argument of selling fukubukuro; moreover, the offer of negatively skewed fukubukuro is probably the best strategy among others. Unfortunately, no fukubukuro, or at least the famous ones, have characteristics of negatively skewed probabilities. Furthermore, if bundling does not provide any advantages related to individuals' risk preferences, then why would sellers offer fukubukuro in a bundle? Theoretically, the benefit of bundling is in reducing the heterogeneity of consumers' valuations. Our data confirm this benefit: all of the coefficients of variation (standard deviation/mean) for bundled lottery A1B_A2B are indeed smaller than those of lottery A1_A2 (see Table 3-2).

We acknowledge that our scope of study is very limited, and that the product lottery is not a full representation of fukubukuro. We do acknowledge that this reduces the external validity of our experiment. Nevertheless, our experiment is not fully detached from fukubukuro. As we mentioned in the previous chapter, the public perceives the distribution probabilities of outcomes, and the outcomes themselves are available in (social) media. This means that when individuals purchase fukubukuro, they are not doing it in a fully ambiguous environment. We believe that our findings on subjects' risk attitudes towards buying product lotteries are still compatible for representing individuals' risk attitudes towards buying fukubukuro.

Finally, fukubukuro is regarded as a New Year's festival activity, in which the pre-buying rituals are just as important as the purchase itself in determining individuals'

buying decisions. Additionally, an individual's life in Japan is based on social interdependence, which emphasizes conformity within groups (Bernheim, 1994) and may have a significant impact on individuals' risk attitudes. We leave all these factors for future research.

Reference

- Anderson, C.K. and Xie, X. (2012). "A Choice Based Dynamic Programming Approach for Setting Opaque Prices." *Production and Operations Management*, 21, 3, 590-605.
- Bernheim, Douglas. (1994). "A Theory of Conformity." *Journal of Political Economy*, 102, 5, 841–877.
- Caplin, Andrew and Leahy, John. (2001). "Psychological Expected Utility Theory and Anticipatory Feelings." *The Quarterly Journal of Economics*, 116, 1, 55-79.
- Conlisk, John. (1993). "The Utility of Gambling." *Journal of Risk and Uncertainty*, 6, 255–275.
- Deck, C., and Schlesinger, H. (2012). "Consistency of Higher Order Risk Preferences." CESifo Working Paper Series 4047, CESifo Group Munich.
- Goldsmith, K. and Amir, On. (2010). "Can Uncertainty Improve Promotion?" *Journal of Marketing Research*, December, 1070-1077.
- Gneezy, U., List, J. A., & Wu, G. (2006). "The Uncertainty Effect: When a Risky Prospect is Valued Less Than Its Worst Outcome." *Quarterly Journal of Economics*, 121, 1283–1309.
- Harrison, G.W., R.M. Harstad and E.E. Rutström. (2004). "Experimental Methods and Elicitation of Values." *Experimental Economics*, 7, 2, 123-140.
- Harrison, G. W., List, J., & Towe, C. (2007). "Naturally Occurring Preferences and Exogenous Laboratory Experiments: A Case Study of Risk Aversion." *Econometrica*, 75, 433-458.

Hey, J.D. 1984. "The economics of optimism and pessimism: a definition and some applications." *Kyklos* 37,181–205.

Tversky, A. and Kahneman, D. (1992). "Advances in Prospect Theory: Cumulative Representation of Uncertainty." *Journal of Risk and Uncertainty*, 5, 297–323.

CHAPTER 4 FUKUBUKURO: AN EXPERIMENTAL INVESTIGATION OF RISKY CHOICE AND ITS DETERMINANTS

4.1 Introduction

One famous fukubukuro in Japan is from Yodobashi Camera. As Japan's largest electronic chain, Yodobashi Camera sells various fukubukuro ranging from stationary products to notebook computers. In their fukubukuro, the brand of the product to be received by buyers is shrouded by a special box with a printed product category and prototype picture. For example, Yodobashi Camera sold a mirror-less digital camera fukubukuro, consisting of either a Fujifilm or a Pentax digital camera, during the New Year of 2014 for 20,000 yen (see Figure 4-1).

Figure 4-1 Yodobashi Camera: Mirror-Less Digital Camera

<p>http://akkinews.net/archives/74102</p>	<p>http://fukubukuroyodobashi.blog.jp</p>
<p>Price: ¥20,000 The picture of a camera printed on the box may give some hints of the contents of the fukubukuro.</p>	
<p>Content:</p> <ul style="list-style-type: none"> • Fujifilm XF1 (¥26,000) • SanDisk Class10 8GB (¥800) • Bottle Cap Tripod (¥500) • Total value: ¥27,300 	<p>Content:</p> <ul style="list-style-type: none"> • Pentax Q10 (¥22,000) • SanDisk Class10 8GB (¥800) • Cleaning Set KA11 (¥1,000) • Total value: ¥23,800

The unique characteristic of Yodobashi Camera's fukubukuro is that it randomizes products that have relatively equal values, i.e., there is no jackpot prize, as in Apple's fukubukuro. In addition, the probability of receiving one product to that of others is also perceived to be equal. In such conditions, risk preference, and not skewness preference, is the dominant force in individuals' buying decisions.³¹ Even more interesting is the fact that Yodobashi Camera shrouds a feature-rich electronic product, the feature information of which is essential for consumers to pick the best item among alternatives.³²

An abundant amount of literatures has affirmed the positive roles of information and familiarity in consumers' buying decisions (Swaminathan, 2003). Yet, for the consumers, being well-informed or familiar with a product that they intend to buy may not be an easy task. First, searching for product information is costly (Stigler, 1961), especially when an excessive amount of detailed information may be necessary for the consumer to comprehend a feature-rich electronic product. Second, experience is sometimes necessary for the consumer to gain knowledge of a product's features and functions (Bruck, 1985). Third, even if the information is available and costless to obtain, the consumer may experience an "information overload" that may produce a reverse effect on his or her intentions to buy (Jacoby, 1984; Eppler and Mengis, 2004). Therefore, there are some circumstances in which less and simpler information is desirable and buying fukubukuro rather than one certain product is an optimal choice for the consumers.

³¹ A zero-skewed lottery would undermine skewness preference.

³² For branded fukubukuro like Apple's, such shrouding is trivial since potential buyers are likely to be brand-loyal consumers or experienced buyers who are very much well informed on the features of its products.

4.2 Motivation

It is important to note that we investigated fukubukuro by using two experimental methods: valuation and choice experiments. We conducted the two experiments in consecutive order, in which, for validity reasons, the valuation experiment preceded the choice experiment. Since we elicited individuals' risk preferences in the valuation experiment (see the previous chapter), we also wanted to know how well this elicited risk parameter predicts individuals' choice behaviors. In a real market setting, however, valuations may be more complicated to acquire in certain situations, especially when consumers are not familiar with the products or lack sufficient product information. In such situations, consumers' tasks would mainly revolve around choice rather than valuation.

As aforementioned, Yodobashi Camera offers camera and notebook fukubukuro, in which various brands with their own specific, rich features are available in the market. In this situation, evaluating each brand and choosing the best one may be too cumbersome or costly for consumers. Thus, less-informed consumers may find fukubukuro to be a direct and simple way to solve their decision tasks even without discount prices as incentives. Therefore, an experimental investigation that examines individuals' likelihoods of choosing product lotteries in various product-related information settings would be necessary.

4.3 Experimental Design

We employed a within-subject design in which each subject is exposed to varying ordered *hypothetical* choice tasks or scenarios. Each choice task has a different type of product and functionality. At the same time, similarity among product features is

maintained within the choice tasks. We used simple products as the control goods and feature-rich electronic products as the treatment goods. In each choice task, subjects have to choose one of the following three options: a certain product, its substitutes, and a product lottery in which there is a known probability of receiving either one of the products. In order to mimic Yodobashi Camera's fukubukuro and to control for individuals' skewness preferences, we applied 50/50 prospects to the product lotteries. There is no price attributed to each product in all of the choice tasks.³³

We chose pens and Kit Kats as the control goods and provided subjects with product information and the opportunity to use or taste these goods during the valuation experiment. Thus, subjects are assumed as having product knowledge and familiarity in the choice experiment.³⁴ In terms of the treatment goods, we chose feature-rich electronic products, such as smartphones, cameras, and notebooks, and treated them for less information. Cameras and notebooks are particularly chosen to mimic Yodobashi Camera's fukubukuro. We did not provide any detailed information on these products, although their pictures and exact names are clearly described in each of the choice tasks (see the choice tasks in the Appendix).

In summary, our choice experiment consists of five tasks in the following product categories: pens, bundled pen and Kit Kat, smartphones, cameras, and notebooks. In particular, the pens are Pilot Frixion and Pentel Surari, the smartphones

³³ The absence of price attributes is similar to setting the "opportunity cost" as equal to the value of the most preferred product. If subjects have a strong preference for one product, then the expected value of the product lottery must be lower than the opportunity cost of receiving it. This would undermine the role of risk preference in the choice task for the control goods, in which product information is available. Still, it is interesting to know whether risk preference affects individuals' choice behaviors, especially in the case of the treatment goods.

³⁴ In particular, we conducted the choice experiment before the outcome session in the valuation experiment. By doing so, subjects' choice behaviors would not be affected by their ownership of the experimental goods.

are Iphone 5S and Galaxy S5, the cameras are Canon 1DX and Nikon D4, and the notebooks are Toshiba PortegeZ930 and Lenovo IdeaPad U300s (for detailed information on these products, please refer to the links provided in the Appendix). We deliberately chose high-end smartphones, cameras, and notebooks to ensure that most of the subjects would not already own the products at the time of the experiment.

4.4 Results

We conducted two choice experiments after the WTP experiment with 38 students ($n_1=21$ and $n_2=17$) at the Department of Economics, University of Indonesia, Depok, West Java, Indonesia on March, 10th 2014. There are 22 males and 16 females; most of them are first- and second-year students (25). Despite having 38 subjects in total, we found that some subjects missed or did not respond to a particular choice task.

Table 4-1 shows the frequency of the subjects who chose a product lottery. It is surprising that a very small number of subjects chose a product lottery of the control goods since a significant number of the subjects are risk-seeking. On the other hand, it is also surprising that the number of the many subjects who chose a product lottery of the treatment goods is well above the number of risk-seeking subjects. The first impressions from these findings are that the effect of risk preference on subjects' lottery choices for the control goods is not significant, and that uncertainty in deterministic options may induce the subjects to choose a product lottery of the treatment goods.

Table 4-1 Number of Subjects who Chose a Product Lottery

Product Category	Freq.	N
Frixion Pen vs. Surari Pen	1	37
Frixion&Kit Kat vs. Surari&Kit Kat	3	37
Iphone 5S vs. Galaxy S5	11	38
Canon 1DX vs. Nikon D4	19	36
Toshiba PortegeZ930 vs. Lenovo IdeaPad U300s	15	36

Nevertheless, from subjects' responses about their choice motivations, we found the following three main reasons behind subjects' choices of product lotteries: both products have similar qualities (especially the notebooks), both products are attractive (especially the smartphones), and subjects do not have a sufficient knowledge of both products (especially the cameras). Thus, many confounding factors other than latent risk-seeking may induce subjects' lottery choices.

In order to conduct a more rigorous evaluation of the effects of risk preference and information on choice behavior, we measured these effects by controlling for subjects' characteristics and preferences. For this purpose, we conducted an online short survey with subjects on the following four main criteria: degree of familiarity, degree of knowledge, degree of attractiveness, and perceived quality (see the questionnaire in the Appendix).³⁵

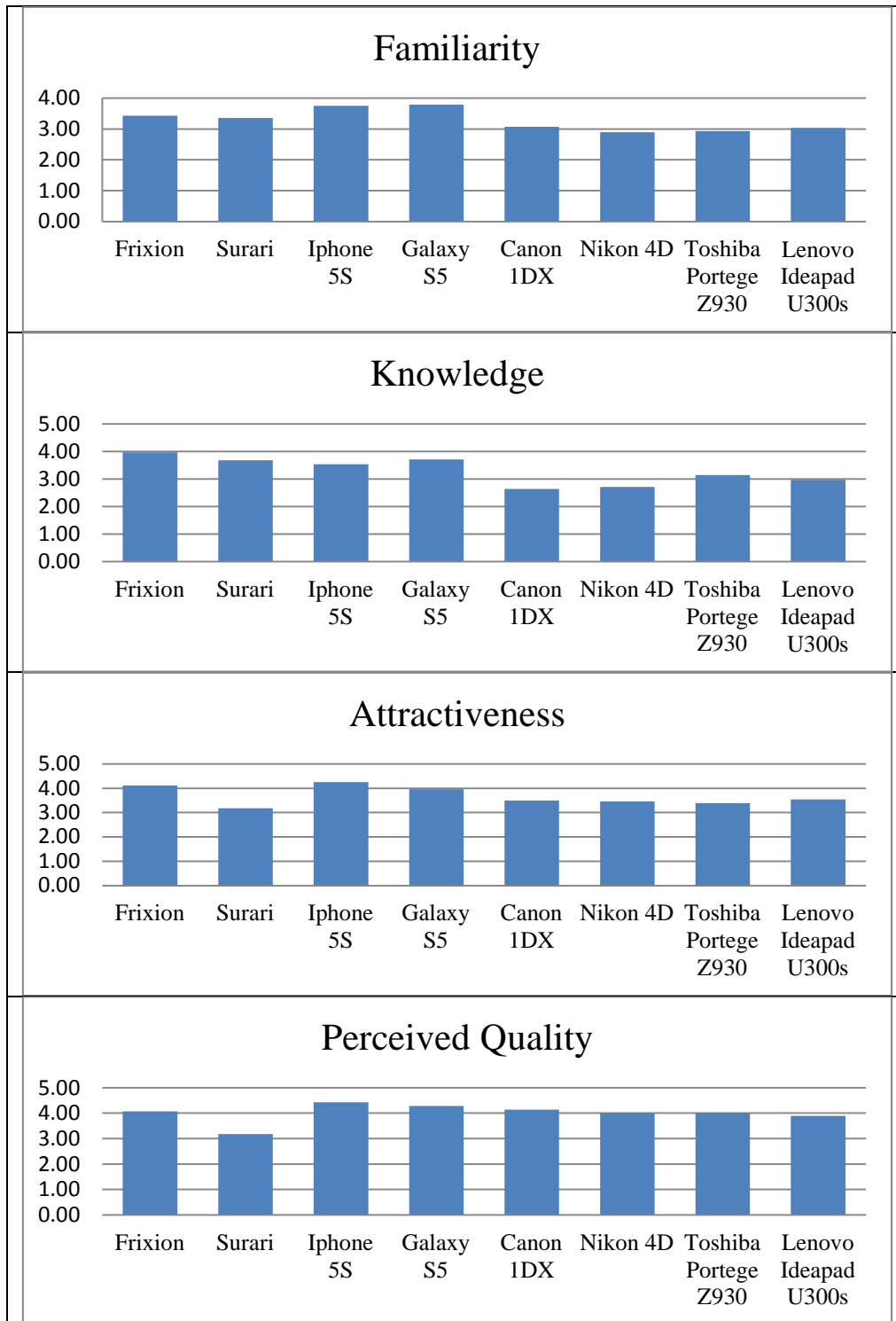
³⁵ We conducted the online survey three months after the choice experiment. It is possible that subjects' assessments of the experimental goods may have changed during this period. We also conducted questions on ownership to at least control for any changes that may have occurred due to changes in ownership status.

4.4.1 Determinant of Lottery Choice

From the 38 subjects who participated in the choice experiment, we received 28 feedbacks (17 males and 11 females) from the online survey. Most of the subjects are first- and second-year economics students (12). Figure 7 shows the average of subjects' responses to the four criteria for each product. Subjects are more familiar with and knowledgeable about the Frixion and Surari pens than the other products, except for Iphone 5S and Galaxy S5. This is not peculiar since the two smartphones are famous among young people and have been advertised and broadcasted massively in the media. The pens, on the other hand, are Japanese, rarely available in the Indonesia market, and newly introduced to the subjects during the experiments. However, as the average product knowledge of the pens is higher than that of the smartphones, it seems that being familiar with a product does not necessarily mean being knowledgeable about it.

In terms of the degree of attractiveness and the perceived quality, it is only for pens that subjects attribute strong attractiveness and perceived quality to one brand. For smartphones, cameras, and notebooks, subjects attribute relatively equal attractiveness and perceived quality. It is possible that when a product's detailed information is not available or when the experience with a product is not feasible, subjects assess the product's attractiveness and quality based on their general perceptions, which may be similar across brands.

Figure 4-2 Average of Subjects' Assessment Responses



Furthermore, we used the following logistic regression model to measure the effects of information and risk preference on subjects' lottery choices:

$$\begin{aligned} \text{lotterychoice} = & \\ & \alpha_0 + \alpha_1 \text{riskpreference} + \alpha_2 \text{gender} + \alpha_3 \text{less_knowledge} + \alpha_4 \text{unfamiliar} \\ & + \alpha_5 \text{leaningattractiveness} + \alpha_6 \text{leaningquality} + \varepsilon \end{aligned}$$

A description of the variables is as follows:

lottery choice: 1= chose a lottery and 0 = did not choose a lottery

risk preference:³⁶ 1= risk-averse, 2=risk-neutral, and 3=risk-seeking

gender: 1= male and 0= female

less knowledge: subjects' degree of knowledge of products' features and functions

In the survey, we classified subjects as having less product knowledge if they answered "less knowledge" or "no knowledge at all" to the questions on their degree of knowledge of the products' features and functions.

unfamiliarity: subjects' degree of familiarity with the products

In the survey, if subjects answered "less familiar" or "not familiar at all" to the questions on their familiarity with the products, then we classified them as being unfamiliar with the products.

³⁶ In the valuation experiment, we asked subjects to value the product lottery at 1/7, 1/4, 1/1, 3/4, and 7/1 prospects. We evaluated subjects' risk preferences at 1/1 product lottery (rp_1) and at all five prospects for both lotteries (rp_5). We classified subjects as having a specific risk preference if at least three of her five WTP function points are directed to that specific risk preference. Meanwhile, the Wilcoxon test is based on the valuation of the product lottery at all five prospects (rp_w). See the previous chapter for further details on this classification.

lean_attractiveness: subjects who have a strong interest in one product above another product in a specific product category.

We classified subjects as having a leaning attractiveness towards two products if their responses to the attractiveness questions on the two products are different by at least two points on the Likert scale.

lean_quality: subjects who see a higher perceived quality in one product above another product in a specific product category.

We classified subjects as having a leaning quality perception of two products if their responses to the perceived quality questions on the two products are different by at least two points on the Likert scale.

dummy_2: dummy variable for bundled pen and Kit Kat

dummy_3: dummy variable for smartphones

dummy_4: dummy variable for cameras

dummy_5: dummy variable for notebooks

dummy_treat: dummy variable for the treatment goods: smartphones, cameras, and notebooks; 1 = treatment goods, 0 = control goods

rp*dum_treat: interaction variable between risk preference and dummy treatment

We expected the following relations: $\alpha_1 > 0$; $\alpha_2 > 0$ ³⁷; $\alpha_3 > 0$; $\alpha_4 > 0$; $\alpha_5 < 0$; and $\alpha_6 < 0$.

Table 4-2 Logistic Regression Test on Determinants of Lottery Choice

lottery choice	model 1	model 2	model 3	model 4	model 5
risk preference	0.025 (0.234)	0.186 (0.226)	0.308 (0.329)	--	0.480 (0.367)
gender	0.519 (0.446)	0.500 (0.446)	0.511 (0.446)	0.339 (0.489)	0.300 (0.491)
less knowledge	1.501*** (0.550)	1.475*** (0.546)	1.556*** (0.552)	1.161** (0.587)	0.733 (0.645)
unfamiliarity	1.209** (0.502)	1.198** (0.501)	1.209** (0.502)	1.324** (0.554)	1.167** (0.596)
lean_attractiveness	0.013 (0.853)	0.005 (0.860)	0.062 (0.856)	0.598 (0.591)	0.968 (1.085)
lean_quality	-1.349 (0.571)	-1.400 (1.155)	-1.342 (1.145)	-1.238 (1.241)	-0.884 (1.365)
dummy_2	--	--	--	--	1.385 (5.108)
dummy_3	--	--	--	--	2.898** (1.188)
dummy_4	--	--	--	--	3.737*** (1.214)
dummy_5	--	--	--	--	3.138*** (1.159)
rp*dum_treat	--	--	--	1.035*** (0.244)	--
constant	-1.573*** (0.571)	-1.890*** (0.607)	-2.132*** (0.779)	-2.811*** (0.579)	-4.825*** (1.404)
N	131	131	131	131	131
Prob> chi2	0.0081	0.0062	0.0058	0.0000	0.0000

Note: () signifies standard error, *** signifies 1%, and ** signifies 5%. As risk preference, we used rp_1 in model 1, rp_5 in model 2, and rp_w in models 3, 4, and 5.

Table 4-2 shows that the variables of less knowledge and unfamiliarity significantly affect subjects' lottery choices. In model 5, in which we introduced dummy variables, less knowledge becomes insignificant. This may be because the effect

³⁷Crosen and Gneezy (2009) found and confirmed that women are indeed more risk-averse than men.

of this variable is very much represented by the effect of the dummy variables. Meanwhile, familiarity seems robust as a positive determinant of subjects' lottery choices. Furthermore, positively significant coefficients for the dummy variables for smartphones, cameras, and notebooks suggest that subjects are more likely to choose a lottery of these products compared to the lottery of pens or the bundled lottery of pen and Kit Kat. We may conclude that subjects who are less informed or unfamiliar with the products have a greater chance of choosing product lotteries. On the other hand, risk preference, gender, lean_attractiveness, and lean_quality seem to not have an effect on subjects' lottery choices.

As aforementioned, the absence of price attributes in the choice tasks may undermine the role of risk-seeking in the lottery choice of control goods. On the other hand, uncertainty towards the value of deterministic products in the treatment goods may magnify the role of risk preference. Therefore, we conducted estimations only on the risk preference for treatment goods. In model 4, we re-estimated model 3 by introducing the interaction variable between risk preference and dummy_treatment ($rp*dum_treat$). The results suggest that risk preference is indeed significant in affecting subjects' lottery choices of treatment goods.³⁸

We expected that differences in the attractiveness and perceived quality of goods would produce a negative effect on subjects' lottery choices; however, our data show otherwise. There is even a positive, albeit insignificant, coefficient for diff_attractiveness. It is possible that we have unreliable or inaccurate data on these variables for two reasons: first, the survey was conducted three months after the choice

³⁸ We produced consistent results from model 4 when we used rp_1 and rp_5 in $rp*dum_treat$.

experiment and second, subjects' assessments of perceived quality and attractiveness are trivial when the subjects are less informed and unfamiliar with the products.

4.5 Concluding Remarks

We conducted a hypothetical choice experiment to determine individuals' likelihoods of choosing product lotteries in various information settings. We used simple products for the control goods and complex products for the treatment goods. We found that a significant number of subjects chose product lotteries of the treatment goods, compared to those who chose lotteries of the control goods. Furthermore, subjects are more likely to choose product lotteries when the choice task involves complex products rather than simple products. Regression analyses suggest that subjects who are risk-seeking or have less product knowledge and familiarity are more likely to choose product lotteries.

A further interpretation of these results is that unfamiliarity and complexity of options may trigger subjects' indecisiveness. Therefore, fukubukuro may provide a simple and direct solution for the subjects who are indecisive. Although psychological and experimental studies have related indecisiveness to risk aversion (Danan and Ziegelmeyer, 2006; Potworowski, 2010), our findings suggest the contrary. Even if we relate the choice of product lotteries to subjects' self-interest in avoiding responsibility of the outcomes or to what is called the "delegation motive" (Hamman et al., 2010), it would still be sensible for risk-averse subjects to choose product lotteries.

Here, we would like to argue that the relationship between risk preference and a lottery choice is not fixed and should be based on the individual's motive for choosing the lottery. Risk-seeking individuals may find the lottery as a solution device to their maximization problem, while risk-averse individuals may find it as a delegation device

to their decision problem. Most subjects stated less familiarity with and indifference to products as their motives for choosing product lotteries, while only one subject perceived the lottery as a delegation device; these findings support the positive relationship between a risk-seeking preference and a lottery choice as a conclusive result of our experiment.

References

Bruck, M. 1985. "The effect of product class knowledge on information search behavior." *Journal of Consumer Research*, 12, 1, 1-6.

Croson, R. and U. Gneezy. 2009. "Gender differences in preferences." *Journal of Economic Literature*, 47, 2, 1-27.

Danan, E. and Ziegelmeyer, A. 2006. "Are preferences complete? An experimental measurement of indecisiveness under risk," *Papers on Strategic Interaction* 2006-01, Max Planck Institute of Economics, Strategic Interaction Group.

Eppler, J.M., and Mengis, J. 2004. "The concept of information overload: A review of literature from organization science, accounting, marketing, MIS, and related disciplines." *The Information Society*, 20, 325-344.

Hamman, J. R., Loewenstein, G., Weber, R. A. 2010. "Self-Interest through Delegation: An Additional Rationale for the Principal-Agent Relationship." *American Economic Review*, 100, 1826-1846.

J. Jacoby. 1984. "Perspectives on information overload." *Journal of Consumer Research*, 10, 4, 432-436.

Potworowski, G. A. (2010). "Varieties of Indecisive Experience: Explaining the Tendency to Not Make Timely and Stable Decisions." Ph.D. Thesis, the University of Michigan.

Stigler, George J. 1961. "The Economics of Information," *Journal of Political Economy*, 69, 3, 213-225.

Swaminathan,V. 2003. “The Impact of Recommendation agents on Consumer Evaluation and Choice: The Moderating Role of Category Risk, Product Complexity, and Consumer Knowledge.” *Journal of Consumer Psychology*, 13, 1, 93-101.

CHAPTER 5 CONCLUSION

In this chapter, we discuss our findings in a broader perspective and apply fukubukuro to a wide range of public policies. We admit that some of our explanations may be speculative in nature due to the unavailability of supporting data in the form of closely related literature. However, our speculations may stimulate a more interesting discussion and further theoretical and empirical research in the future.

5.1 Discussion

Fukubukuro is unique with over 100 years of history in the Japanese economy. In the cultural context, fukubukuro is perceived as a present from the retailers to their customers. Yet, in economics, fukubukuro, or the product lottery, is just one of the many strategies of sellers to increase their profits (see Chapter 1.2 for the literature). In simple terms, fukubukuro may increase sellers' profits if a significant number of potential buyers are risk-seeking or skewness-seeking. In this context, retailers are similar to betting shops that attract risk-seeking people. In light of economic role of fukubukuro, an empirical investigation of how individuals value fukubukuro or product lotteries would be necessary to determine the effectiveness of the fukubukuro strategy in increasing the profits of sellers.

There are four main findings from our experiments: first, in general, risk has a negative effect on subjects' WTP; second, a considerable number of subjects are risk-seeking; third, many subjects are optimistic especially when buying *negatively skewed* product lotteries; and fourth, a risk-seeking preference and familiarity with and knowledge about products have significant effects on subjects' risky choice behaviors.

The first finding is consistent with standard economic theory. Nevertheless, the considerable number of risk seekers that we found in our study is contrary to the overwhelming evidence in risky choice literatures that most individuals are risk-averse in monetary gambles. There are at least three possible explanations for this discrepancy: first, subjects may have perceived the reward payment in the experiment as a gift or as what is called the “house money effect”; second, the high attractiveness of the experimental goods to the subjects may have triggered their risky behaviors; and third, risk attitudes may not have been stable across domains.

Here, we would like to remind our readers that we applied a broad meaning of optimism in this thesis: being optimistic means that uncertainty has a non-negative effect on individuals’ valuations of product lotteries. However, literatures on risky choice have defined optimism as overweighting the probability of receiving a good outcome and underweighting the probability of receiving a bad outcome (Hey, 1984). In a limited domain, prospect theory describes individuals’ tendencies to overweight the *small* probability of winning a *large* prize (Tversky and Kahneman, 1992). Our experiment found that most subjects tend to overweight the *high*, rather than the *small*, probabilities of receiving a more preferable product. One explanation for this is that a 1/8 chance of receiving a more preferable product when buying a *positively skewed* product lottery is not too small, and/or a more preferable product is not too large to capture the prospect theory phenomenon. Thus, we could not rule out the possibility that individuals overvalue positively skewed product lotteries such as Apple’s fukubukuro.

The fourth finding is derived from our choice experiment. Subjects who are risk-seeking or have less knowledge about and familiarity with the goods are more likely to

choose product lotteries. By concealing information, retailers provide potential buyers a direct and simple way to solve their buying decision problems. In this case, a solution motive has a more dominant effect than a delegation motive on subjects' lottery choices, which would explain the positive, rather than negative, relationship between a risk-seeking preference and a lottery choice (see Chapter 4 for further explanations).

5.2 Policy Implication

Normally, hiding or restricting information is negative and especially so when people have optimism bias. Nevertheless, in general, we found no evidence of optimism bias in our study results. As far as we know, no concerns regarding fukubukuro have ever been raised by consumers in Japan. In addition, fukubukuro may be regarded as a solution for less-informed consumers. Therefore, fukubukuro is perhaps self-sustaining and does not need to be regulated.

Furthermore, if most buyers are satisfied with fukubukuro, then they may perceive fukubukuro more as a gift from the retailers than as a selling strategy to exploit them. In this gift-giving context, when gifts are scarce and more preferable goods are scarcer than the less preferable goods, retailers should find ways to allocate them to the customers as fairly as possible.

Several allocation mechanisms can be used to allocate scarce goods, such as price, lottery, first-come-first-serve, and queues (Boyce, 1994; Taylor, Tsui, and Zhu, 2003). In a broad sense, retailers apply all of these allocation mechanisms in fukubukuro; thus, fukubukuro may be perceived as a synthesized or multi-stage allocation system. However, the following question remains: why do retailers not use pure prices as the allocation mechanism of their "gifts"? This may be explained by two

possible explanations related to the cultural and social backgrounds of the Japanese society. First, the lottery and queuing are indeed common and natural allocation institutions in Japan and second, the Japanese are such highly homogenous individuals (Wiersema and Bird, 1993) that the lottery, as an allocation mechanism of scarce goods, allows optimal fairness in these conditions (Goodwin, 2005). These factors may very well explain why fukubukuro seems to be culturally and socially congruent with Japanese life.

Some societies, however, may be reluctant to buy fukubukuro due to its close relation with gambling. This may be especially true in Indonesia, where the experiments were conducted, as the majority of Muslims there in are prohibited by Islamic law to buy and sell something that is uncertain, thereby limiting the practice of fukubukuro in the Indonesian market. Nevertheless, random drawing, such as “*arisan*,” a traditional rotating savings and credit association and commercial banks’ lottery prize, is used in Indonesia as an allocation mechanism in many occasions. This kind of random allocation mechanism that requires no participation fee and causes no absolute decrease in individuals’ initial wealth when they lose the drawing is more acceptable and applicable to the Indonesian community. In line with this, our subjects did not seem to perceive the buying of product lotteries in our experiment as gambling but rather as participating in a random allocation mechanism. Perhaps due to this design that significantly lessened the degree of product uncertainty and the risk of losing initial wealth, subjects considered even the receipt of a less preferable product as a surplus; for this reason, our experiment posed no major ethical problems for our subjects.

Even when lotteries are tolerable and acceptable to a community such as that of Japan, from the point of view of economics, the use of lotteries as an allocation mechanism can still have a pitfall, i.e., when the receivers of the scarce goods are unlikely to be those who would value them most. However, in order to buy fukubukuro, people are obliged to queue up, which may incur such a significant cost to them that the eventual receivers of the prize would value it most. Further, fukubukuro's use of (discounted) prices as a (initial) screening device may reduce the pitfall factor in lottery mechanisms. Thus, in the allocation of scarce private goods, fukubukuro may provide the best outcomes for a society. Such fukubukuro-type allocation mechanisms have been applied in Japan to the sale of other private goods such as concert tickets. It is even likely to apply this mechanism to the allocation of public goods such as school appointments and in-kind government transfers.³⁹ We provide a thorough discussion on this in the section on future research.

5.3 Lessons Learned

In this section, we note some lessons learned from our experiments, especially the first or the preliminary experiment in which we had major validity problems (see Chapter 2 for a detailed discussion on these problems). When we first began to design our preliminary experiment, there were at least three elements of experimental design that we needed to address: first, choosing between a within- and a between-subject design; second, choosing the ideal products for the fukubukuro experiment; and third, choosing between MPL and BDM as the elicitation procedure. Since no general formula for the best methods for all experiments exists, what is actually more crucial for the success of

³⁹For an example, see Ledyard and Palfrey (1994), who combined voting and a lottery mechanism for efficient public goods allocation.

the experiment is the manner in which the experimenter incorporates these elements into a practical experimental design. The general rule of thumb concerning the methods, goods, and incentive compatibility mechanisms that we chose for our experiment was developed in practice.

A particular experiment can be divided into two main parts: a decision session and a training session. While the experimenter relies on the decision session for producing the experimental results, subjects rely heavily on their understanding of the decision tasks and their consequences, which is acquired in the training session, when making their real decisions. Certainly, designing a good decision task is necessary for the success of an experiment. In our case, the use of MPL over that of BDM rendered our decision tasks more complicated. However, the failure of our preliminary experiment was not due to a poor design in the MPL decision tasks, but a poor design in our training session.

Therefore, we learned from our experiment that the most important thing after designing a good decision task is to design a good training session. The training session should be designed as a miniature of the experiment in which all representations of the decision tasks *plus* a practice of the implementation of the incentive compatibility mechanism (random drawing) are required for every subject based on his or her practice decisions. In addition, for the experiments with private goods, extra attention should be given to the necessity of allowing subjects the opportunity to use/taste the goods before their completion of the real decision tasks.

5.4 Future Research

We admit that the number of subjects in our experiment is too limited to yield strong empirical findings, and that the design of our experiment is too restrictive to represent fukubukuro fully, which greatly decreases the external validity of our experiment. Still, we sincerely hope that this thesis provides sufficient guidance on the possible directions of future research on fukubukuro. In the following section, we present the possible paths of future work.

For obvious reasons, it would be important to conduct the experiment in Japan and to solicit the participation of Japanese individuals as the subjects of future experiments. A natural experiment on fukubukuro would be ideal for achieving external validity, and this could be done in cooperation with Yodobashi Camera or the Apple Store. Apple's fukubukuro, especially, would be the best case for studying skewness preference, which we did not address in our study. Yet, if a natural experiment is too ambitious, a more feasible alternative would be to conduct a laboratory experiment by using the Eeckhoudt and Schlesinger (ES) method in the context of goods. The ES method has been used to investigate higher-order risk attitudes such as prudence (skewness preference) and temperance (Deck and Schlesinger, 2010).

Another possibility is to have a field or an in-situ experiment that elicits individuals' risk preferences or skewness-seeking at the time of queuing for the fukubukuro. This field experiment would not only provide evidence for the relationship between a risk- or skewness-seeking preference and the purchase of fukubukuro but also offer the advantage of internalizing the effect of New Year's Eve on individuals' buying decisions.

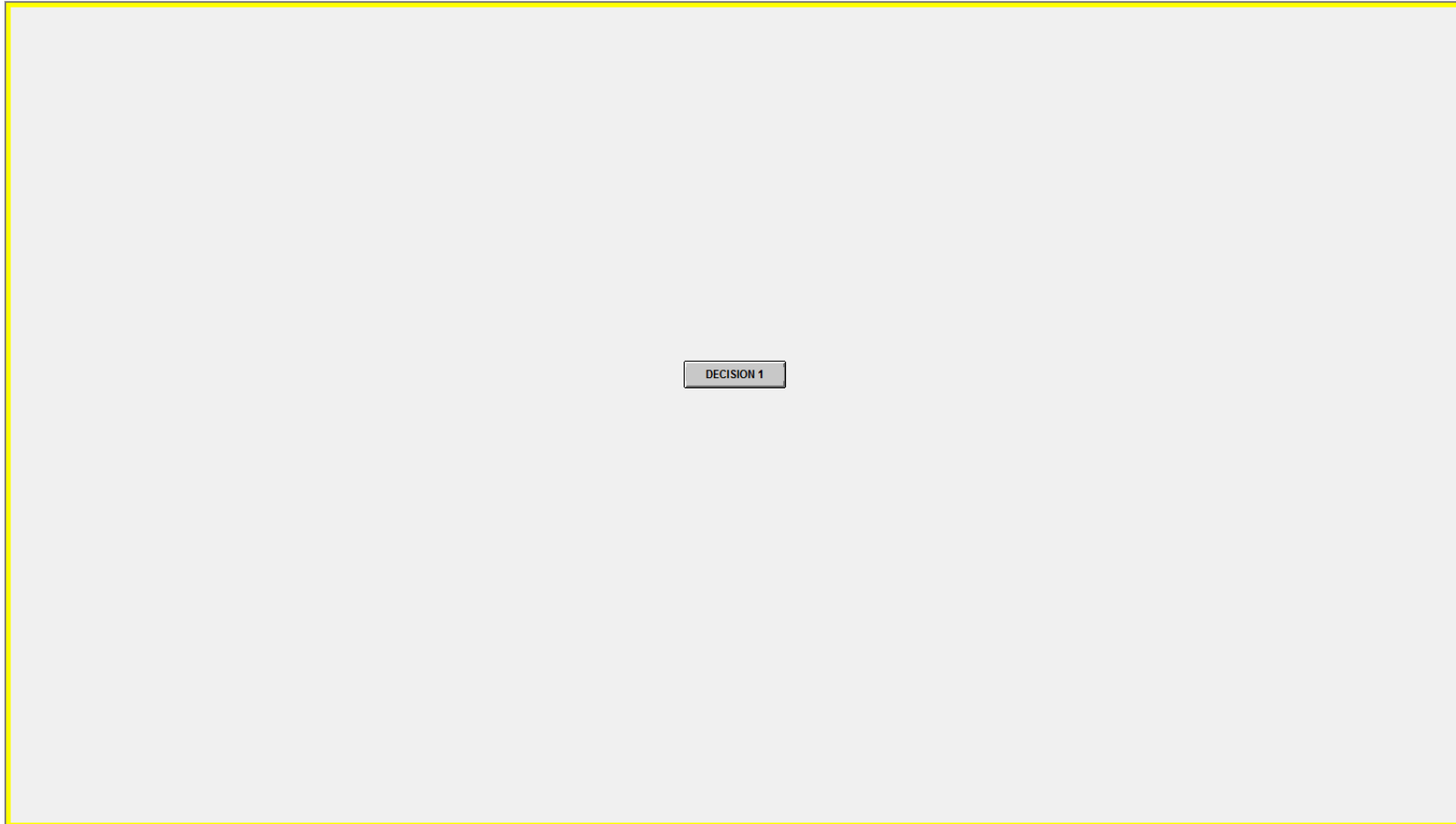
As aforementioned, our study produced some puzzling results that would require further examination: the considerable number of risk-seeking subjects and the relationship between a risk-seeking preference and the choice of product lotteries. Future research may be able to confirm whether these puzzling results are limited to our experiment and/or limited to product lotteries. Finally, it is especially important to conduct theoretical and empirical research on the welfare effect of fukubukuro as a price discrimination tool and an allocation mechanism of scarce goods.

References

- Boyce, LR. 1994. "Allocation of goods by lottery." *Economic Inquiry* 32, 457-476.
- Deck C., Schlesinger H. 2010. "Exploring higher-order risk effects." *Review of Economic Studies* 77, 4, 1403–1420.
- Eeckhoudt, L. and Schlesinger, H. 2006. "Putting Risk in its Proper Place", *American Economic Review*, 96, 280–289.
- Goodwin, Barbara. 2005. *Justice by lottery*. Charlottesville, VA: Imprint Academic. Kindle file.
- Hey, J.D. 1984. "The economics of optimism and pessimism: a definition and some applications." *Kyklos* 37,181–205.
- Ledyard, John O., Palfrey, Thomas R. 1994. "Voting and lottery drafts as efficient public goods mechanisms". *The Review of Economic Studies* 61, 327-355.
- Taylor, G.A., Tsui, K.K., and Zhu, L. 2003. "Lottery or Waiting-Line Auction?" *Journal of Public Economics* 87, 1313–1334.
- Tversky, A. and Kahneman, D. (1992). "Advances in Prospect Theory: Cumulative Representation of Uncertainty." *Journal of Risk and Uncertainty*, 5, 297–323.
- Wiersema, M.. and A. Bird. 1993. "Organizational demography in Japanese firms: Group heterogeneity. Individual dissimilarity and top management turnover." *Academy of Management Journal* 36:996-1025.

Appendix of Chapter 2

1. The example of task valuation of product lottery



Good A1



Good A2



Lottery 1

The picture illustrates the prize for decision one. It is a lottery of "Good A1" and "Good A2". If you would like to know more about it, please consult the information sheet on your table.

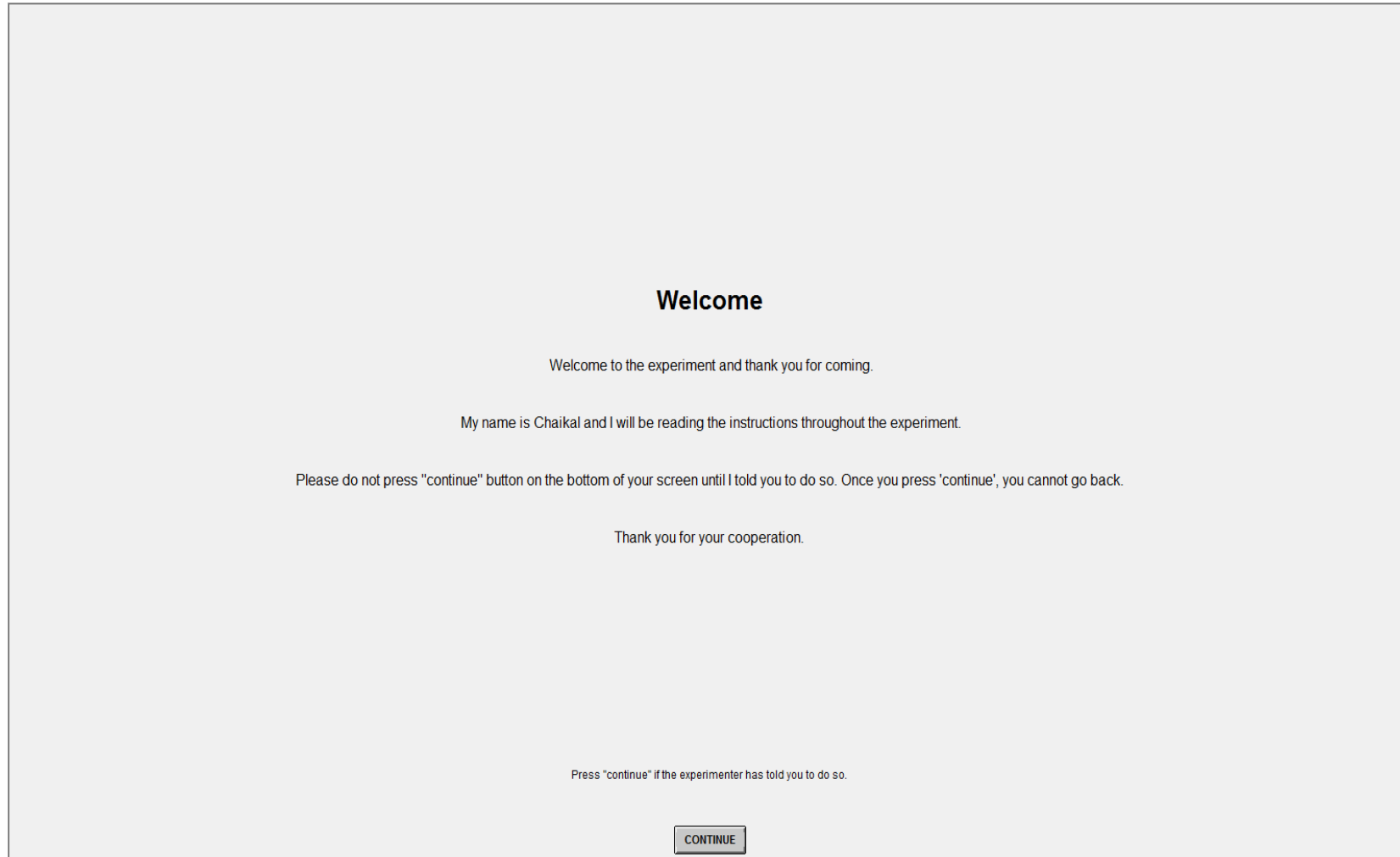
Take your time during the decision making, because you will have to wait for all participants to finish their decisions before proceeding.

Press "continue" and you will then proceed to decision 1.

CONTINUE

Decision 1	Option A	Please Choose A or B	Option B
1	You pay nothing and receive nothing	A <input type="radio"/> B <input type="radio"/>	You pay 2000 rupiah and receive Good A1 or A2
2	You pay nothing and receive nothing	A <input type="radio"/> B <input type="radio"/>	You pay 4000 rupiah and receive Good A1 or A2
3	You pay nothing and receive nothing	A <input type="radio"/> B <input type="radio"/>	You pay 6000 rupiah and receive Good A1 or A2
4	You pay nothing and receive nothing	A <input type="radio"/> B <input type="radio"/>	You pay 8000 rupiah and receive Good A1 or A2
5	You pay nothing and receive nothing	A <input type="radio"/> B <input type="radio"/>	You pay 10000 rupiah and receive Good A1 or A2
6	You pay nothing and receive nothing	A <input type="radio"/> B <input type="radio"/>	You pay 12000 rupiah and receive Good A1 or A2
7	You pay nothing and receive nothing	A <input type="radio"/> B <input type="radio"/>	You pay 14000 rupiah and receive Good A1 or A2
8	You pay nothing and receive nothing	A <input type="radio"/> B <input type="radio"/>	You pay 16000 rupiah and receive Good A1 or A2
9	You pay nothing and receive nothing	A <input type="radio"/> B <input type="radio"/>	You pay 18000 rupiah and receive Good A1 or A2
10	You pay nothing and receive nothing	A <input type="radio"/> B <input type="radio"/>	You pay 20000 rupiah and receive Good A1 or A2
11	You pay nothing and receive nothing	A <input type="radio"/> B <input type="radio"/>	You pay 22000 rupiah and receive Good A1 or A2
12	You pay nothing and receive nothing	A <input type="radio"/> B <input type="radio"/>	You pay 24000 rupiah and receive Good A1 or A2
13	You pay nothing and receive nothing	A <input type="radio"/> B <input type="radio"/>	You pay 26000 rupiah and receive Good A1 or A2
14	You pay nothing and receive nothing	A <input type="radio"/> B <input type="radio"/>	You pay 28000 rupiah and receive Good A1 or A2
15	You pay nothing and receive nothing	A <input type="radio"/> B <input type="radio"/>	You pay 30000 rupiah and receive Good A1 or A2
16	You pay nothing and receive nothing	A <input type="radio"/> B <input type="radio"/>	You pay 32000 rupiah and receive Good A1 or A2
17	You pay nothing and receive nothing	A <input type="radio"/> B <input type="radio"/>	You pay 34000 rupiah and receive Good A1 or A2
18	You pay nothing and receive nothing	A <input type="radio"/> B <input type="radio"/>	You pay 36000 rupiah and receive Good A1 or A2
19	You pay nothing and receive nothing	A <input type="radio"/> B <input type="radio"/>	You pay 38000 rupiah and receive Good A1 or A2
20	You pay nothing and receive nothing	A <input type="radio"/> B <input type="radio"/>	You pay 40000 rupiah and receive Good A1 or A2
<input type="button" value="Confirm"/>			

3. Screenshots of Instructions



INTRODUCTION

In this experiment you will be making a series of decisions. We expect that most people will earn some money and bring home some products at the end of the experiment. Your outcomes are determined by your own choices in ways that will be explained in more details below. You cannot lose anything by taking part.

There must be no talking during the experiment and you must not look at what other people are doing. And please turn off your cellular phone and all other communication device. If you have any questions, or need assistance of any kind, please raise your hand and an experimenter will come to you.

Thank you for your cooperation.

Press "continue" if the experimenter has told you to do so.

CONTINUE

PARTICIPATION REWARD

In a moment, you will receive your cash reward for your time participating in this experiment.

We will distribute the cash receipt to each one of you. Please, write your name and put your signature on the receipt.

Thank you for your cooperation.

Press "continue" if the experimenter has told you to do so.

CONTINUE

THE TASKS

In the experiment you will be asked to make a series of choices in decision problems. Mainly these will be decisions about choosing between buying [option B] or not buying [option A] a product at various different prices. There are **17** decisions in total and in each decision there will be **20** questions.

How you answer these questions is down to you, but it's important to take every question seriously because your answers will determine what you leave this room with today.

Are there any questions?

Press "continue" if the experimenter has told you to do so.

CONTINUE

AT THE END OF THE EXPERIMENT

By the end of the experiment you will have made a large number of choices. One of these will be selected at random and you will get your chosen option.

The exact procedure will work like this: you will be asked to draw a number from a bag. This number will be **the decision** that applies to you. You will then have to draw another number, from 1 to 20 to determine **the question** that will apply. The computer will retrieve your answer. If you have chosen option A in that question, you will get A and if you have chosen option B, then that's what you will receive.

Some of these choices (A and B) are actually lotteries. If your actual choice is a lottery you will again draw a number to decide the final result.

So remember:

Every choice you make may count.

The choices you make are entirely down to you.

Are there any questions?

Press "continue" if the experimenter has told you to do so. You will then proceed to the practice section.

CONTINUE

PRACTICE DECISION

Now, to get a feel for how the questions work, we will show you some practice questions.

The first practice decision concerns a BLUE NOTEBOOK, just like the one the experimenter is showing. You will be asked whether you would like to buy the book at various different prices.

In this example there are five prices. At each price you have to decide whether you wish to buy the book (option B) and pay the stated price or not buy the book (option A) and pay nothing.

As you go down the screen the prices get higher. In other words, option B gets worse.

Are there any questions?

Press "continue" if the experimenter has told you to do so.

CONTINUE

PRACTICE DECISION

One thing: We will never force you to buy or not to buy, but the computer has been set up to only allow consistent answers.

For example, when you say that you won't buy the good at 16000 rupiah, the computer will automatically fill in the answers so that you won't buy the good at higher prices.

And if you say you are willing to buy the good at one price, the computer will fill in your answers so that you buy the good at lower prices as well. Try playing around with the practice question to see how it works.

Are there any questions?

Take your time during practice, because you will have to wait for all participants to finish their practice before proceeding.

Press "continue" if the experimenter has told you to do so.

CONTINUE

Question #	Option A	Please Choose A or B	Option B
1	You pay nothing and receive nothing	A C C B	You pay 8000 rupiah and receive the notebook
2	You pay nothing and receive nothing	A C C B	You pay 16000 rupiah and receive the notebook
3	You pay nothing and receive nothing	A C C B	You pay 24000 rupiah and receive the notebook
4	You pay nothing and receive nothing	A C C B	You pay 32000 rupiah and receive the notebook
5	You pay nothing and receive nothing	A C C B	You pay 40000 rupiah and receive the notebook
<input type="button" value="Confirm"/>			

PRACTICE DECISION 2

We will now introduce three other types of decisions you will face.

We now concern a bundle that consists of two goods, a GREEN NOTEBOOK and a BLACK PEN, just like the one the experimenter is showing. If you say you are willing to buy the bundle at one price, it means that you agree to buy both of the goods and pay the stated price.

Are there any questions?

Take your time during practice, because you will have to wait for all participants to finish their practice before proceeding.

Press "continue" if the experimenter has told you to do so.

CONTINUE

Question #	Option A	Please Choose A or B	Option B
1	You pay nothing and receive nothing	A <input type="radio"/> B <input checked="" type="radio"/>	You pay 8000 rupiah and receive the bundle
2	You pay nothing and receive nothing	A <input type="radio"/> B <input checked="" type="radio"/>	You pay 16000 rupiah and receive the bundle
3	You pay nothing and receive nothing	A <input checked="" type="radio"/> B <input type="radio"/>	You pay 24000 rupiah and receive the bundle
4	You pay nothing and receive nothing	A <input checked="" type="radio"/> B <input type="radio"/>	You pay 32000 rupiah and receive the bundle
5	You pay nothing and receive nothing	A <input checked="" type="radio"/> B <input type="radio"/>	You pay 40000 rupiah and receive the bundle

PRACTICE DECISION 3

Here, we would like to introduce you with a new feature of product which we called the bundle lottery product.

The following example concerns two bundles, bundle A and bundle D. Bundle A contains a RED PEN and a GREEN NOTEBOOK and Bundle D contains a BLACK PEN and a BLUE NOTEBOOK like the ones that experimenter is showing.

If you say you are willing to buy a lottery of these bundles at one price, it means that you agree to buy **a bundle** at the stated price without knowing exactly which one of the two bundles you will receive. It is a random allocation in which there is 50% chance that you will receive Bundle A and 50% chance that you will receive Bundle D.

Are there any questions?

Take your time during practice, because you will have to wait for all participants to finish their practice before proceeding.

Press "continue" if the experimenter has told you to do so.

CONTINUE

Question #	Option A	Please Choose A or B	Option B
1	You pay nothing and receive nothing	A <input type="radio"/> C <input type="radio"/> B	You pay 8000 rupiah and receive bundle A OR bundle D
2	You pay nothing and receive nothing	A <input type="radio"/> C <input type="radio"/> B	You pay 16000 rupiah and receive bundle A OR bundle D
3	You pay nothing and receive nothing	A <input type="radio"/> C <input type="radio"/> B	You pay 24000 rupiah and receive bundle A OR bundle D
4	You pay nothing and receive nothing	A <input type="radio"/> C <input type="radio"/> B	You pay 32000 rupiah and receive bundle A OR bundle D
5	You pay nothing and receive nothing	A <input type="radio"/> C <input type="radio"/> B	You pay 40000 rupiah and receive bundle A OR bundle D
<input type="button" value="Confirm"/>			

PRACTICE DECISION 4

Now, we concerns four goods: two pens, a RED PEN and a BLACK PEN, and two books, a GREEN NOTEBOOK and a BLUE NOTEBOOK like the ones that experimenter is showing.

There are four bundle combinations of these four goods: Bundle A contains a RED PEN and a GREEN NOTEBOOK, Bundle B contains a RED PEN and a BLUE NOTEBOOK, Bundle C contains a BLACK PEN and a GREEN NOTEBOOK, and Bundle D contains a BLACK PEN and a BLUE NOTEBOOK.

As in the previous example, if you say you are willing to buy a lottery of these bundles at one price, it means that you agree to buy **a bundle** at the stated price without knowing exactly which one of the four bundles you will receive. It is a random allocation in which you may receive one of any of these four bundles with equal probability.

Are there any questions?

Take your time during practice, because you will have to wait for all participants to finish their practice before proceeding.

Press "continue" if the experimenter has told you to do so.

CONTINUE

Question #	Option A	Please Choose A or B	Option B
1	You pay nothing and receive nothing	A <input type="radio"/> C <input checked="" type="radio"/> B	You pay 8000 rupiah and receive bundle A OR bundle B OR bundle C OR bundle D
2	You pay nothing and receive nothing	A <input type="radio"/> C <input checked="" type="radio"/> B	You pay 16000 rupiah and receive bundle A OR bundle B OR bundle C OR bundle D
3	You pay nothing and receive nothing	A <input type="radio"/> C <input checked="" type="radio"/> B	You pay 24000 rupiah and receive bundle A OR bundle B OR bundle C OR bundle D
4	You pay nothing and receive nothing	A <input checked="" type="radio"/> C <input type="radio"/> B	You pay 32000 rupiah and receive bundle A OR bundle B OR bundle C OR bundle D
5	You pay nothing and receive nothing	A <input type="radio"/> C <input checked="" type="radio"/> B	You pay 40000 rupiah and receive bundle A OR bundle B OR bundle C OR bundle D
<input type="button" value="Confirm"/>			

REVIEW QUESTION

Before we advance to the real experiment, we would like you to answer two questions in the multiple choice format to see that we have explained the experiment properly.

It is important for you to answer the question based on your understanding. We will check your answers and go over them with you if you get one wrong.

Are there any questions?

Press "continue" if the experimenter has told you to do so.
You will then proceed to the review question.

CONTINUE

Question #	Option A	Please Choose A or B	Option B
1	You pay nothing and receive nothing	A <input type="checkbox"/> B <input type="checkbox"/>	You pay 8000 rupiah and receive the bundle
2	You pay nothing and receive nothing	A <input type="checkbox"/> B <input type="checkbox"/>	You pay 16000 rupiah and receive the bundle
3	You pay nothing and receive nothing	A <input type="checkbox"/> B <input type="checkbox"/>	You pay 24000 rupiah and receive the bundle
4	You pay nothing and receive nothing	A <input type="checkbox"/> B <input type="checkbox"/>	You pay 32000 rupiah and receive the bundle
5	You pay nothing and receive nothing	A <input type="checkbox"/> B <input type="checkbox"/>	You pay 40000 rupiah and receive the bundle

Suppose that your decision on the bundle goods in the practice session is shown in the picture. Suppose also you had drawn this decision as your real decision and drawn question **number 2** as the question that would apply to you. What are the consequences for you from this situation?

1. You receive the bundle and pay 32000 rupiah. 2. You receive the bundle and pay 8000 rupiah.
 3. You receive the bundle and pay 16000 rupiah. 4. You receive nothing and pay nothing.

Your answer is:

REVIEW QUESTION

You answered that you will receive nothing and pay nothing.

Number three is the correct answer. In such situation, you will receive the bundle and have to pay 16000 rupiah.

Please wait for the experimenter to come to your seat and review the question with you;
to proceed the experimenter needs to input an unlock code.

Experimenter's Entry

Confirm

REVIEW QUESTION

Suppose there are two pens and two books, pen A and pen B, book C and book D available. If a bundle lottery consists of a pen and a book, what you will receive if you buy this kind of product?

1. Either pen A or pen B and book D for sure.
2. One pen which is either pen A or pen B and one book which is either book C or book D.
3. Pen A for sure and either book C or book D.
4. Both pen A and pen B and both book C and book D.

Your answer is:

Confirm

REVIEW QUESTION

You answered that you will receive pen A for sure and either book C and book D.

Number two is the correct answer; you will receive one pen which is either pen A or pen B and one book which is either book C or book D.

Please wait for the experimenter to come to your seat and review the question with you; to proceed the experimenter needs to input an unlock code.

Experimenter's Entry

Confirm

GOODS INSPECTION

Before we advance to the real experiment, we would like you to have a look at the real goods presented for the real decisions.

After the inspection is complete, we will distribute to each of you the information sheets concerning the goods.

You may use these information sheets during the real experiment.

Are there any questions?

Press "continue" if the experimenter has told you to do so.

CONTINUE

THE REAL EXPERIMENT

In a moment you will do the real decisions. There are 17 decisions in total. In each decision there are a total of **20 questions** and as in the practice you have to make a choice between the two options in every case.

We remind you that one of your decisions will be selected at random as your real decision.

Therefore, take your time during decision because:

Every choice you make may count.

The choices you make are entirely down to you.

Are there any questions?

Press "continue" if the experimenter has told you to do so.
You will then proceed to the decision 1.

CONTINUE

3. Product Information

Correction Tape WHIPER RUSH

Description

Pen-style for high portability. The retractable design enables you to retract the head with just one hand. The pen-style clip also allows you to hold it securely in a pocket or side-pocket of briefcase.

- **Tape absorbs ink fast:** The newly developed tape absorbs ink fast and dries up instantly resulting in clean overwriting with unsmeared letters.
- **Smooth correction:** Improved Mini Roller *Head for smooth correction*. The new Mini Roller Head is designed to perform better at multiple strokes for seamless correction.
- **2 Way corrections:** Pull for a whole sentence, push for one letter. This means neat results by keeping a close eye on the parts intended for correction whilst making the corrections.



A1

Tombow Mono 2way Correction Tape + Eraser - 5 mm X 6 m - White Body

Description

Those of us who often use both pen and pencil (or a pen + pencil multi pen!) will find that the Tombow Mono 2way Correction Tape + Eraser is the perfect all-in-one correction tool. One end has a slide-out correction tape head, while the other has a twist-out eraser. Both can be retracted when not in use, ensuring protection against damage. The correction tape and eraser are refillable.

- With an eraser formula feeding: Firmly erase characters.
- Head slide mechanism: The head is easy in-out with one hand. Head protection during storage.
- Type refill: You can also change eraser packed.
- High durability and strength to break.
- Dimensions: 4.0 x 0.9 x 0.7 inches (10.3 x 2.3 x 1.9 cm).



A2

ZEROHARI Stapler Paper Stitcher

Description

Here's a great item for fans of the StitchLock staple-less stapler series, a new device for joining sheets of paper that never needs staples! Just insert the sheets you want to bind together, and the ZEROHARI (the name means "zero staples") will knit the sheets together for you. With a compact design and excellent engineering, this device can join up to four sheets of paper together at once.

- Compact, slim and light enough
- portable and easy to store
- Size: T50 × L82 × D24mm.
- Weight: 32 g.



B1

Plus Paper Clinch Stapleless Stapler: Stapling paper without the use of staples.

Description

New concept of stapler that infolds paper sheets to fasten without using staples, Staple-free, you will have no more worry about staples mixing in the wrong place, neither troublesome waste separations before disposal. The paper clinch fastens up to 4 sheets of paper without the use of staples

- Palm sized for easy handling and perfect for children and seniors
- The punched out paper is stored neatly in the base of the paper clinch just slide it open and occasionally empty out the paper punches
- Easy to shred and recycle papers without the worry of staples getting jammed
- Ergonomically designed for one handed use keep one in the office, school or home



B2

BUNDLE 1



A1



B1

BUNDLE 2



A1



B2

BUNDLE 3



A2



B1

BUNDLE 4











A2



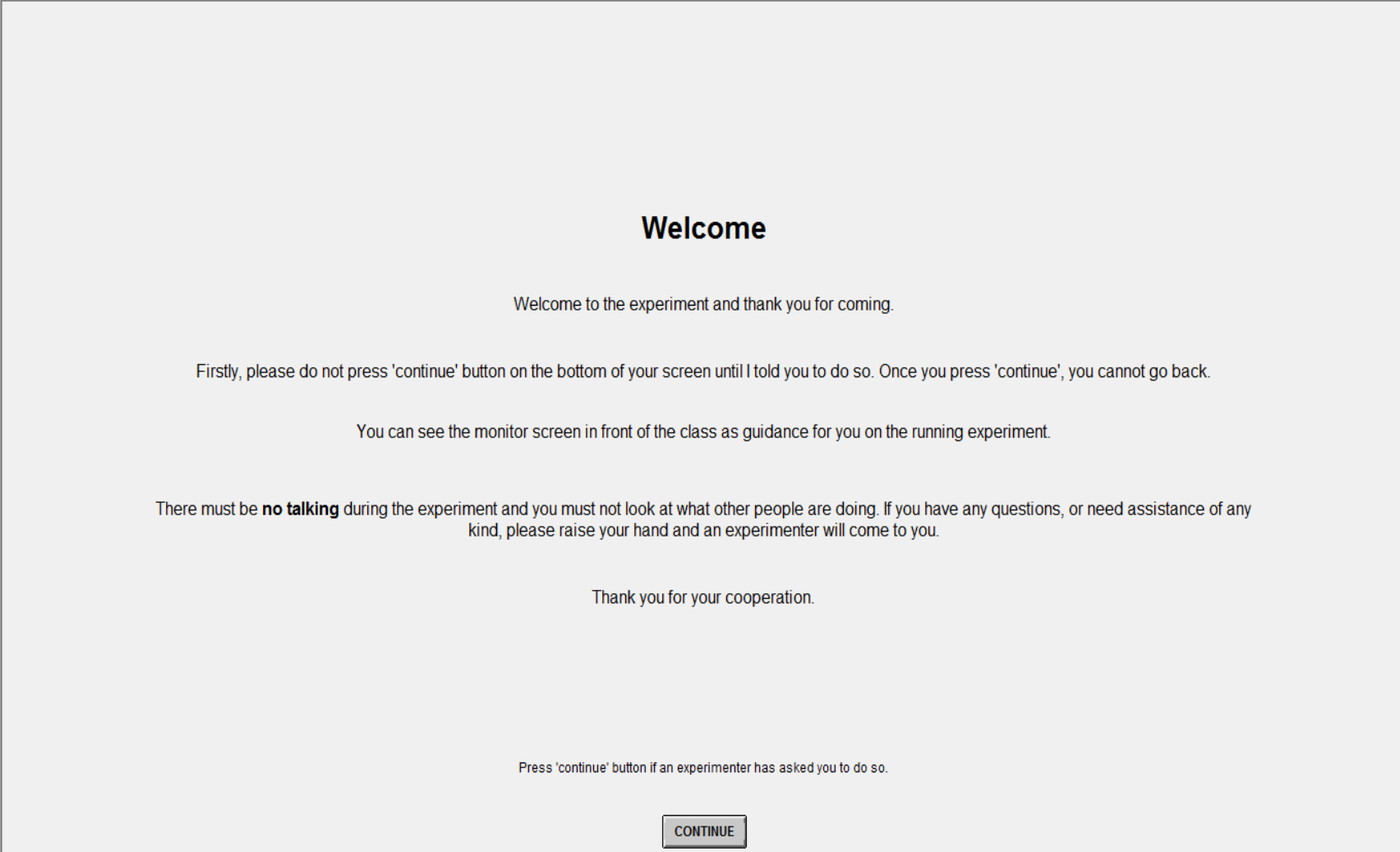
B2

Appendix of Chapter 3

1. The example of task valuation of product lottery

BOX5		Decision 6	
		<p>How much your maximum willingness to pay for a random product from the BOX5?</p> <input data-bbox="1543 699 1644 732" type="text"/>	
			
			
			
<p>The picture illustrates the prize for decision six which we call "BOX5". If you buy this prize you will receive one of the 8 products in the picture, selected at random. If you would like to know more about it, please consult the information sheet on your table.</p>		<input data-bbox="1547 954 1612 986" type="button" value="Confirm"/>	
<p>Are you interested in this product? YES <input type="radio"/> NO <input type="radio"/></p> <input data-bbox="712 1262 786 1294" type="button" value="Confirm"/>		<p>Reminder: As in the training session, the market price will be determined by random drawing. If this decision is your chosen decision then your willingness to pay (WTP) will be compared to the market price. If your WTP is higher than or equal to the market price then you will get a random bundle product from BOX5 and pay the market price, if not then you get nothing and pay nothing.</p> <p>Therefore, the best strategy for you in this situation is to truthfully reveal your WTP.</p>	

2. Screenshots of Instructions



Welcome

Welcome to the experiment and thank you for coming.

Firstly, please do not press 'continue' button on the bottom of your screen until I told you to do so. Once you press 'continue', you cannot go back.

You can see the monitor screen in front of the class as guidance for you on the running experiment.

There must be **no talking** during the experiment and you must not look at what other people are doing. If you have any questions, or need assistance of any kind, please raise your hand and an experimenter will come to you.

Thank you for your cooperation.

Press 'continue' button if an experimenter has asked you to do so.

CONTINUE

GENERAL INSTRUCTIONS

In this experiment you will be making a series of decisions. Your outcomes are determined by your own decisions in ways that will be explained in more details below.

Today, we expect that most of you will take home some money and some goods from this experiment. You cannot lose anything by taking part.

Are there any questions?

Press 'continue' if an experimenter has asked you to do so.

CONTINUE

PARTICIPATION COMPENSATION

In a moment, you will receive cash money as a compensation for your time participating in this experiment.

We will distribute the cash receipt to each one of you. Please write your name and put your signature on the receipt.

Thank you for your cooperation.

Press 'continue' if an experimenter has asked you to do so.

CONTINUE

THE TASKS

In the experiment you will be asked to make a series of decision problems. There will be **15 (fifteen)** decisions in total. Mainly these will be decisions about your willingness to pay (WTP) for various products.

How you answer these questions is down to you, but it's important to take every question seriously because your answers will determine what you leave this room with today.

Are there any questions?

Press 'continue' if an experimenter has asked you to do so.

CONTINUE

THE END OF THE EXPERIMENT

By the end of the experiment you will have made **15** decisions. **One** of these will be selected at random and you will get your decision option.

The exact procedure will work like this: you will be asked to draw a ball numbered **1** to **15** from '**Decision**' urn. This number will be the decision that applies to you. We will then have to draw a ball numbered **1000** to **40000** (the multiplication of 10000) from '**Price**' urn to determine the price that will apply. The computer will retrieve your answer. If your willingness to pay on the chosen decision is higher than or equal to the price then you will get the good and pay the price, if not then you get nothing and pay nothing.

Some of these decisions are actually **lotteries**. If your actual choice is a lottery you will again draw a ball numbered from '**Product**' urn to decide the final result.

So remember:

Every decision you make may count.
The decisions you make are entirely down to you.

Are there any questions?

Press 'continue' if an experimenter has asked you to do so.

CONTINUE

PRACTICE DECISION

Now, to get a feel for how the decisions work, we will show you some practice decisions.

The first practice decision concerns a Mechanical Pencil, just like the one the experimenter is showing. Now, please look at the screenshot of decision task on the monitor screen in front of the class.

First, there is information about the running decision in the upper right corner. In the upper left, the screen provides picture of the concerned good. And below the picture, there is a question on whether you interested in the product or not. Press **'yes'** button if you interested in the product and press **'no'** if otherwise.

You will then be asked how much your maximum willingness to pay for the book. The value of willingness to pay is between **0** to **40000**. Once you have determined your **maximum** willingness to pay for the book then type the value in the provided box and click 'confirm'.

Are there any questions?

Press 'continue' if an experimenter has asked you to do so.

CONTINUE

PRACTICE QUESTION 1

One thing: Even though your willingness to pay is bounded from **0** to **40000**, you are free to state your willingness to pay to any value in this range.

Please remind yourself that your willingness to pay will be compared to the random market price. The range of market price is **1000** to **40000** and it will be determined by a random drawing.

If your stated willingness to pay is higher than or equal to the market price then you get the pencil and pay the market price. If your stated willingness to pay is lower than the market price then you get nothing and pay nothing.

Therefore, it is for your best interest to state truthfully your willingness to pay.

Are there any questions?

Press 'continue' if an experimenter has asked you to do so.

CONTINUE

Practice 1



The picture illustrates the prize for practice one, which we call "M PENCIL".

How much your maximum willingness to pay for the pencil?

Confirm

Are you interested in this product? YES NO

Confirm

Reminder: The range of market price of the pencil is 1000-40000. This market price will be determined by random drawing. If this decision is your chosen decision then your willingness to pay (WTP) will be compared to the market price. If your WTP is higher than or equal to the market price then you will get the pencil and pay the market price, if not then you get nothing and pay nothing.

Therefore, the best strategy for you in this situation is to truthfully reveal your WTP.

RESULT OF PRACTICE DECISION 1

Your maximum willingness to pay for the pencil is 9000

Let's have one of you come in front of the class and draw a ball numbered 1000 to 40000 from **Price** urn to determine the price for the pencil.

After that please type the drawn price to the empty box below and press 'continue' to know the consequences of your decision on WTP for the book.

This is the price of the pencil

RESULT OF YOUR PRACTICE DECISION 1

Your maximum willingness to pay for the pencil is 9000

The price of the pencil is 10000

Next

Your WTP for the book is lower than the price. In this situation, you get nothing and pay nothing.

Are there any questions?

Press 'continue' if an experimenter has asked you to do so.

CONTINUE

PRACTICE QUESTION 2

We now concern a bundle product which we called Bundle 1 that consists of two products, a Mechanical Pencil and an Eraser, just like the one the experimenter is showing.

Your willingness to pay for Bundle 1 is your willingness to pay for the two products in the bundle.

Are there any questions?

Press 'continue' if an experimenter has asked you to do so.

CONTINUE

Practice 2

Bundle 1: You get Mechanical Pencil **and** Eraser.



The picture illustrates the prize for practice decision two which we call "Bundle 1". Please remind yourself that you get **two** products, a mechanical pencil and an eraser, for buying this bundle.

How much your maximum willingness to pay for the bundle?

10000

Confirm

Are you interested in this bundle? YES NO

Confirm

Reminder: The range of market price of the bundle is 1000-40000. This market price will be determined by random drawing. If this decision is your chosen decision then your willingness to pay (WTP) will be compared to the market price. If your WTP is higher than or equal to the market price then you will get the bundle and pay the market price, if not then you get nothing and pay nothing.

Therefore, the best strategy for you in this situation is to truthfully reveal your WTP.

RESULT OF PRACTICE DECISION 2

Your maximum willingness to pay for the pencil is 10000

Let's have one of you come in front of the class and draw a ball numbered 1000 to 40000 from **Price** urn to determine the price for the pencil.

After that please type the drawn price to the empty box below and press 'continue' to know the consequences of your decision on WTP for the book.

This is the price of the pencil

RESULT OF YOUR PRACTICE DECISION 2

Your maximum willingness to pay for the bundle is 10000

The price of the pencil is 5000

Next

Your WTP for the book is higher than or equal to the price. In this situation, you get the bundle and pay the price.

Are there any questions?

Press 'continue' if an experimenter has asked you to do so.

CONTINUE

PRACTICE QUESTION 3

Here, we would like to introduce you with a new feature of product which we called **Lottery BOX**.

The following example concerns Lottery BOX that consists of two kind of products Mechanical Pencil and Ordinary Pencil like the ones that experimenter is showing.

There are **one** Mechanical Pencil and **three** Ordinary Pencil in the BOX. When you buy a product from Lottery BOX, it means that you buy a **random** product from the box. You do not know exactly which one of the two pencils you will receive. It is a random allocation in which there is a **25%** chance that you will receive a Mechanical Pencil and a **75%** chance that you will receive and Ordinary Pencil.

In the real decision later you will face various decisions on willingness to pay for random product from a lottery box consists of different number of products.

Are there any questions?

Press 'continue' if an experimenter has asked you to do so.

CONTINUE

Practice 3

Lottery BOX X



The picture illustrates the prize for practice decision three which we call "Lottery BOX X". There are four products in the box consists of **one** Mechanical Pencil and **three** Red Ordinary Pencil. If you buy this prize you will get one of the 4 pencils, selected at random.
If you would like to know more about it, please consult the information sheet on your table.

Are you interested in this product? YES NO

Confirm

How much your maximum willingness to pay for a random product from Lottery BOX X?

7000

Confirm

Reminder: The range of market price of a random product from Lottery BOX X is 1000-40000 yen. This market price will be determined by random drawing. If this decision is your chosen decision then your willingness to pay (WTP) will be compared to the market price. If your WTP is higher than or equal to the market price then you will get a random product from Lottery BOX X and pay the market price, if not then you get nothing and pay nothing.

Therefore, the best strategy for you in this situation is to truthfully reveal your WTP.

RESULT OF PRACTICE DECISION 3

Your maximum willingness to pay for the random product is 7000

Let's have one of you come in front of the class and draw a ball numbered 1000 to 40000 from **Price** urn to determine the price for the random product.

After that please type the drawn price to the empty box below and press 'continue' to know the consequences of your decision on WTP for the book.

This is the price of the book

RESULT OF PRACTICE DECISION 3

Your maximum willingness to pay for the random product is 7000

Let's have one of you come in front of the class and draw a ball numbered 1000 to 40000 from **Price** urn to determine the price for the random product.

After that please type the drawn price to the empty box below and press 'continue' to know the consequences of your decision on WTP for the book.

This is the price of the book

RESULT OF PRACTICE DECISION 3

Your maximum willingness to pay for the random product from Lottery BOX X is 7000

The price of the random product from Lottery BOX X is 4000

Next

Your WTP for the lottery is higher than or equal to the price. In this situation, you get the product and pay the price.

Next

Since you get the random product then you will have to draw one ball from **Product** urn. For this lottery, there are 4 balls in the urn consists of **one** number **1** ball (25% probability of getting Mechanical Pencil) and **three** number **2** ball (75% probability of getting Ordinary Pencil).

Are there any questions?

Press 'continue' if an experimenter has asked you to do so.

CONTINUE

PRACTICE QUESTION 4

Here, we would like to introduce you with a new feature of product which we called **Lottery BOX Y**.

The following example concerns Lottery BOX Y that consists of two kind of bundle products, Bundle 1 and Bundle 2. Bundle 1 consists of a Mechanical Pencil and an Eraser whereas Bundle 2 consists of an Ordinary Pencil and an Eraser like the ones that experimenter is showing.

There are **seven** Bundle 1 and **one** Bundle 2 in the BOX Y. When you buy a bundle product from Lottery BOX Y, it means that you buy a **random** bundle product from the box. You do not know exactly which one of the two bundles you will receive. It is a random allocation in which there is a **87.5%** chance that you will receive Bundle 1 and a **12.5%** chance that you will receive Bundle 2.

In the real decision later you will face various decisions on willingness to pay for random (bundle) product from a lottery box consists of different number of (bundle) products.

Are there any questions?

Press 'continue' if an experimenter has asked you to do so.

CONTINUE

Practice 4

BOX10



The picture illustrates the prize for practice decision two which we call "Lottery BOX Y". There are eight bundle products in the box consists of **seven** Bundle 1 and **one** Bundle 2. If you buy this prize you will get one of the 8 bundles, selected at random.
If you would like to know more about it, please consult the information sheet on your table.

Are you interested in this product? YES NO

Confirm

How much your maximum willingness to pay for a random bundle product from Lottery BOX Y?

16000

Confirm

Reminder: The range of market price of a random bundle product from Lottery BOX Y is 1000-40000. This market price will be determined by random drawing. If this decision is your chosen decision then your willingness to pay (WTP) will be compared to the market price. If your WTP is higher than or equal to the market price then you will get a random bundle product from Lottery BOX Y and pay the market price, if not then you get nothing and pay nothing.

Therefore, the best strategy for you in this situation is to truthfully reveal your WTP.

RESULT OF PRACTICE DECISION 4

Your maximum willingness to pay for a random bundle product is 16000

Again, let's have one of you come in front of the class and draw a ball numbered 1000 to 40000 from **Price** urn to determine the price for the random product from Lottery BOX .

And as before, please type the drawn price to the empty box below and press 'continue' to know the consequences of your decision on WTP for the random bundle product.

This is the price of random bundle product from Lottery BOX

RESULT OF PRACTICE DECISION 4

Your maximum willingness to pay for the random bundle product from Lottery BOX Y is 16000

The price of the random bundle product from Lottery BOX Y is 12000

Next

Your WTP for the lottery is higher than or equal to the price. In this situation, you get the bundle product and pay the price.

Next

Since you get the random product then you will have to draw one ball from **Product** urn. For this lottery, there are 8 balls in the urn consists of **seven** number **1** ball (87.5% probability of getting Bundle 1) and **one** number **2** ball (12.5% probability of getting Bundle 2).

Are there any questions?

Press 'continue' if an experimenter has asked you to do so.

CONTINUE

REVIEW

Before we advance to the real experiment, we would like you to answer two questions in the multiple choice format to see that we have explained the experiment properly.

It is important for you to answer the question based on your understanding. We will check your answers and go over them with you if you get one wrong.

Are there any questions?

Press 'continue' if an experimenter has asked you to do so.
You will proceed to the review question.

CONTINUE

REVIEW QUESTION

Suppose you had finished all the fifteen decisions in the decision tasks. Which of these decisions would be applied to you for real?

1. The one that I like most
2. The experimenter will choose it for me.
3. Only one and it will be determined by random drawing.
4. All of these decisions.

Your answer is:

Confirm

REVIEW 1

You answered that the decision that would be applied to you is the one that you like most.

Number three is the correct answer. The decision that would be applied to you is determined by random draw of a ball numbered 1 to 15 from **Decision** urn.
The drawn numbered would be the decision for real.

Please wait for the experimenter to come to your seat and review the question with you; Entry code will be announced by an experimenter after review has been completed.

Entry Code

Confirm

REVIEW QUESTION 2

Suppose there are two goods: good X1 and good X2. If a Lottery BOX consists of three X1 and one X2, what you will receive if you buy a product from Lottery BOX?

1. Good X1 for sure.
2. One of good X1 and one of good X2.
3. I get all of the four goods.
4. Only one good which is either good X2 or good X1.

Your answer is:

Confirm

REVIEW 2

Your answer is correct.

Number four is the correct answer; you will receive one good which is either good X1 or good X2.

Please wait for the experimenter to come to your seat and review the question with you; Entry code will be announced by an experimenter after review has been completed.

Entry Code

Confirm

GOODS INSPECTION

Before we advance to the real experiment, an experimenter will present the goods for the real decisions.

An experimenter will come to your desk to show and give you a taster for the products one by one. After the inspection complete, we will distribute to each of you the product information sheets.

You may use these information sheets during the real experiment.

Are there any questions?

Press 'continue' if an experimenter has asked you to do so.

CONTINUE

THE REAL EXPERIMENT

In a moment you will do the real decisions. There are **15 decisions** in total.

We remind you that one of your decisions will be selected at random as your real decision which involving **real transaction** of buying or not buying a product at a certain price.

Therefore, take your time during decision:

**Every decision you make may count.
The decisions you make are entirely down to you.**

Are there any questions?

Entry code will be announced after all participants ready for real decisions. During decisions session, we will not read the instruction for you.

Entry Code

3. Product Information

PILOT FRIXION BALL CLICKER 0.5mm

The first pen that is erasable. Pen features the same beloved thermo-sensitive ink that can be erased by friction, but now comes in a sleek, retractable body. Just push the clip to extend and retract the tip. The special rubber tip at the end allows you to erase conveniently without having to cap or uncap your pen.



A1

Zebra Surari Emulsion Ink Pen 0.5mm

You are viewing a breakthrough in ink history, the development of a new ink type. The new Emulsion ink from Zebra combines the best quality of a ballpoint and gel ink pen. It has the smoothness of an oil-based ballpoint ink pen but features the vibrant colors of a gel ink pen.



A2

NESTLE KITKAT GREEN TEA

Enjoy your break with KITKAT.

Unique with special flavor from Japan: KITKAT GREEN TEA. Kitkat with real green tea.

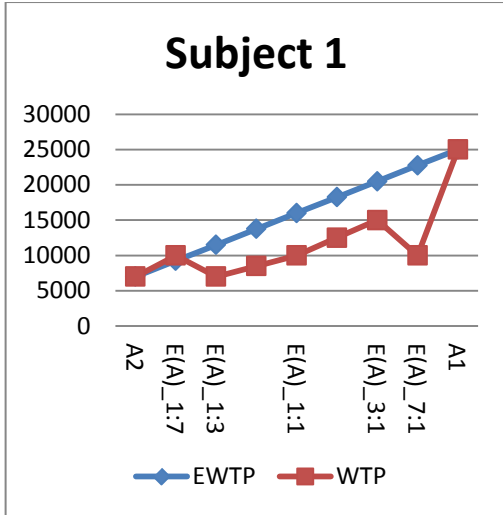
Nestle delicious taste wafer makes your break more enjoyable. This box consists of 12 mini two-fingered Green Tea KitKat.



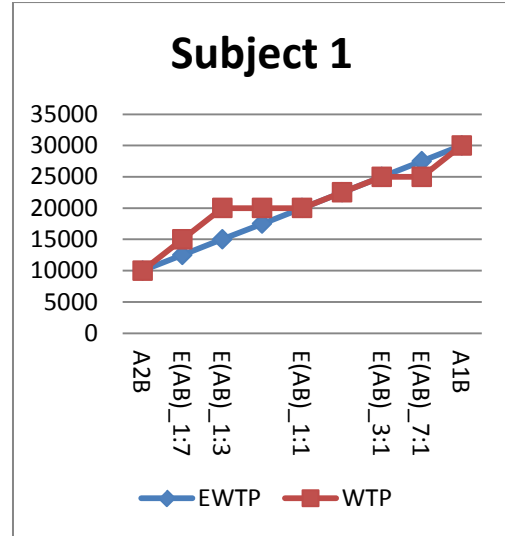
B

4. Subject WTP Function

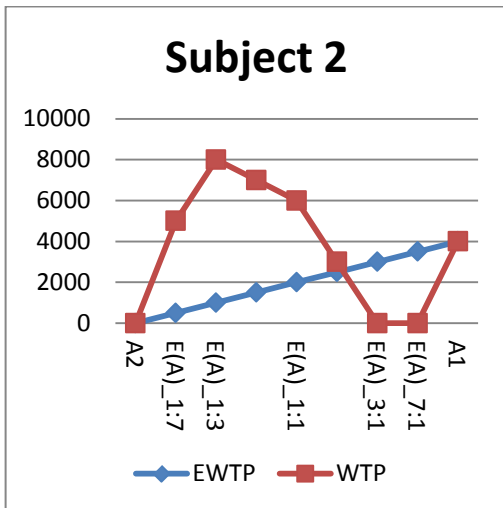
Lottery A1_A1



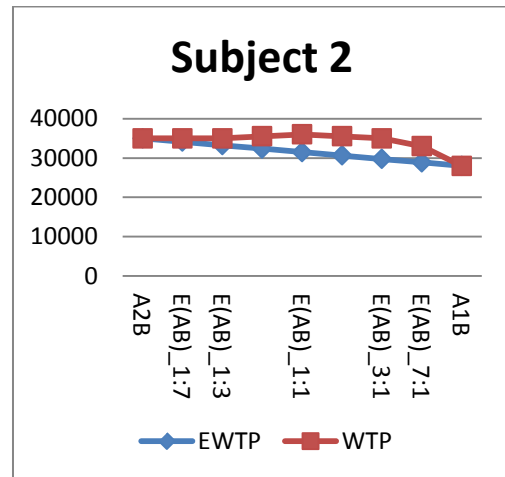
Lottery A1B_A2B



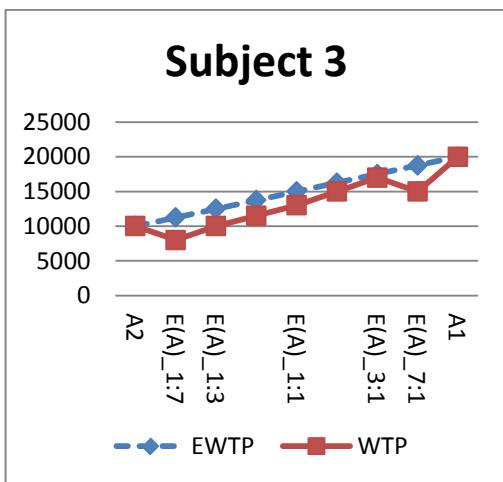
Subject 2



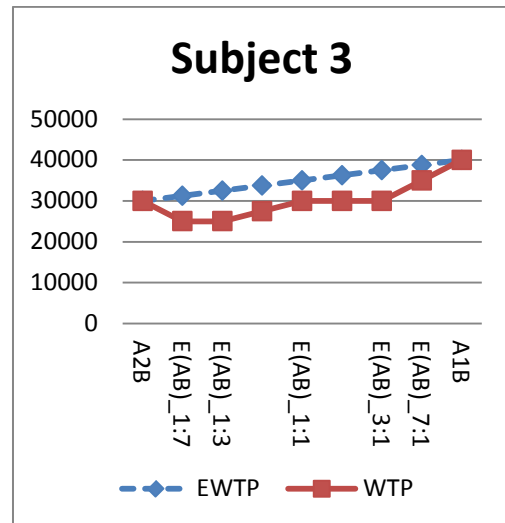
Subject 2

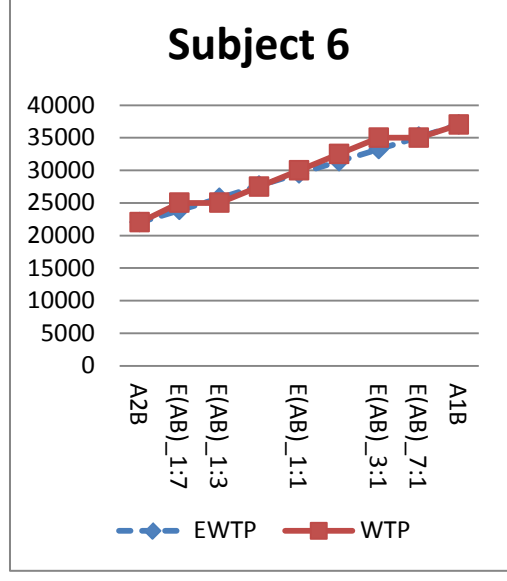
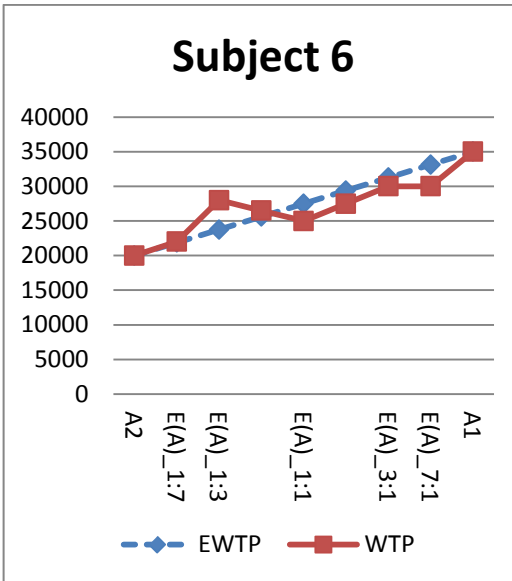
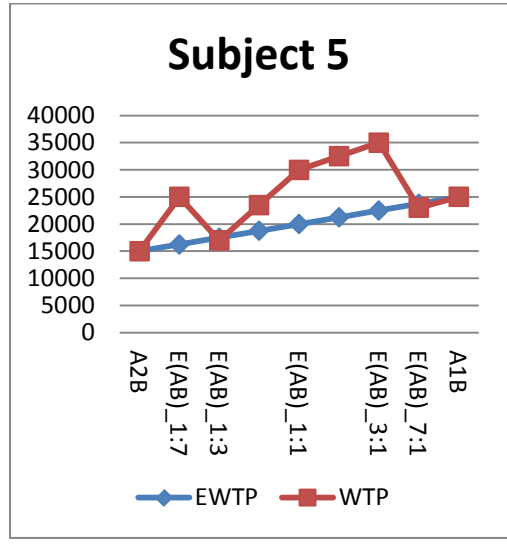
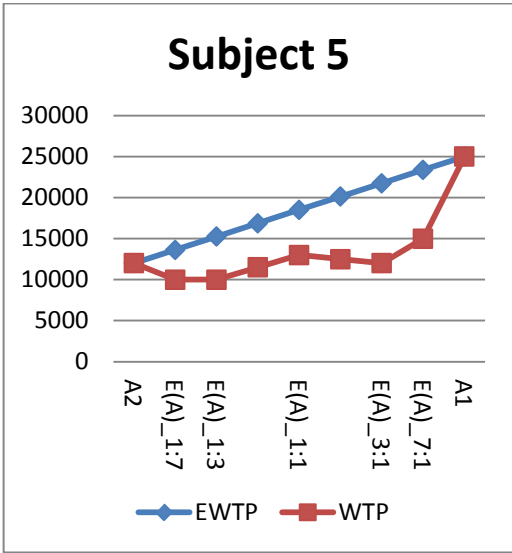
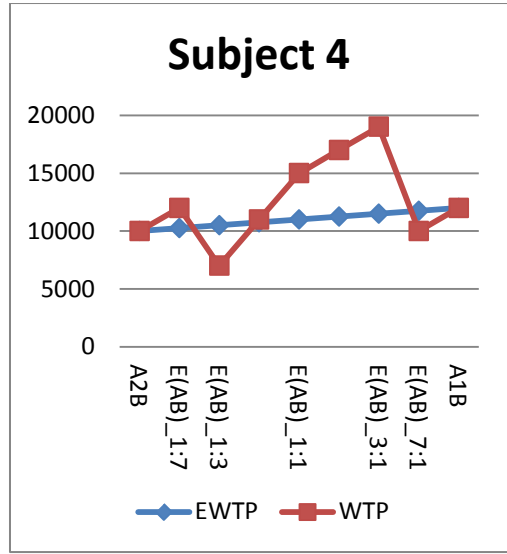
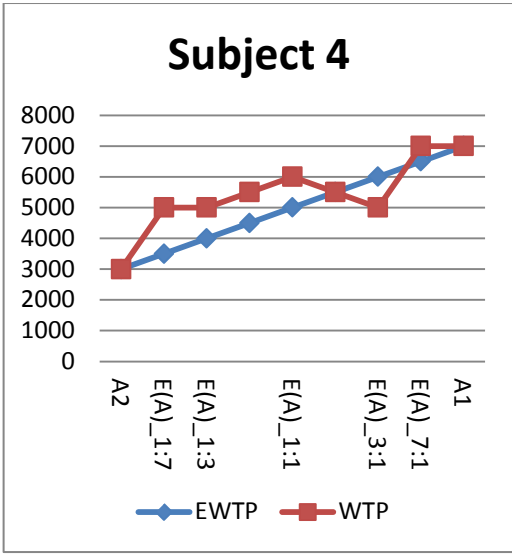


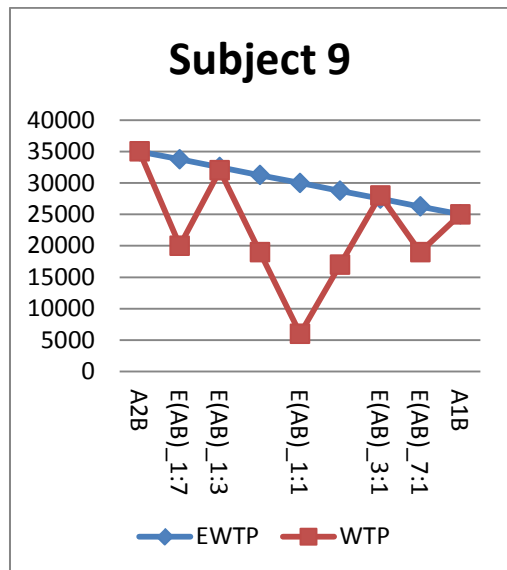
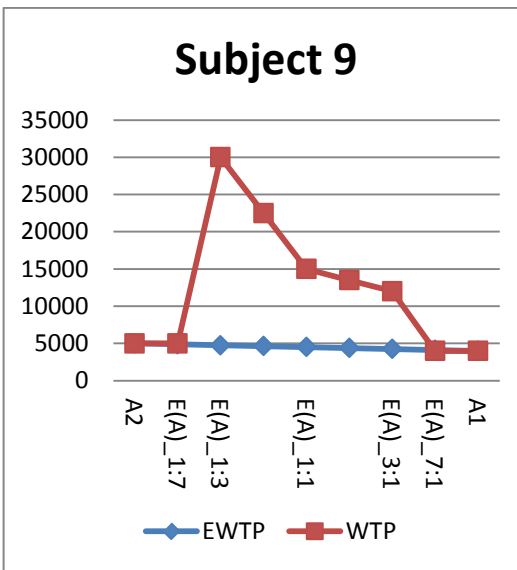
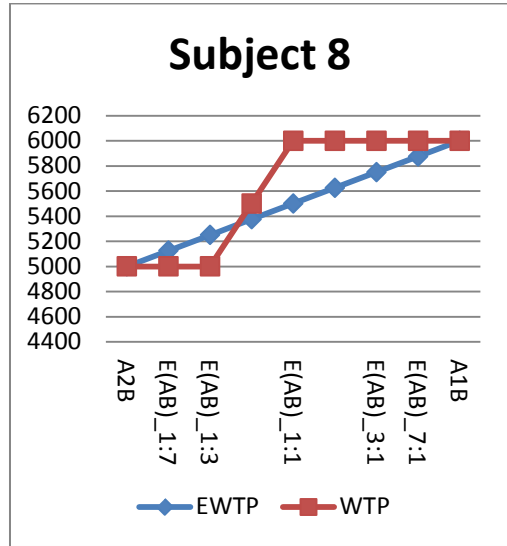
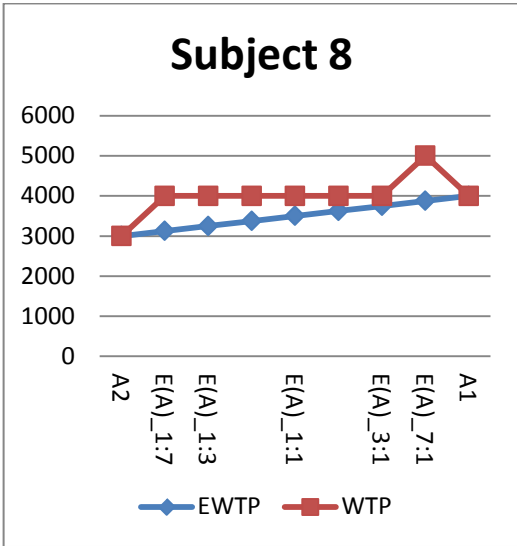
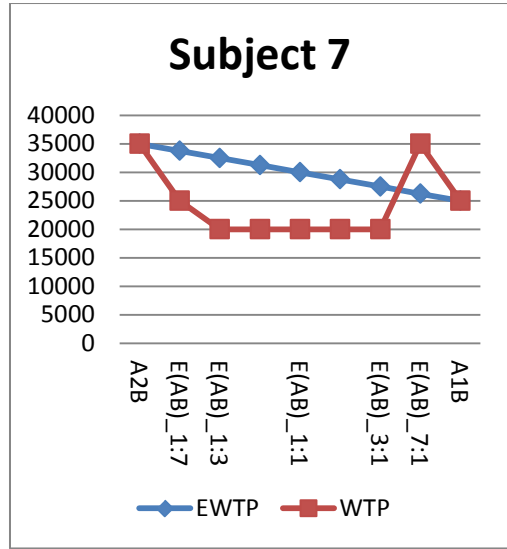
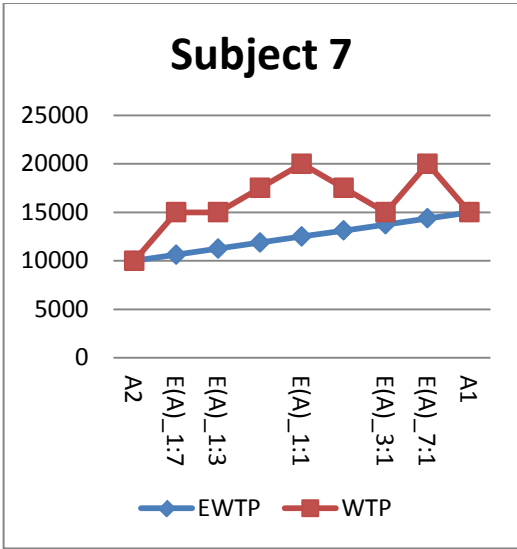
Subject 3

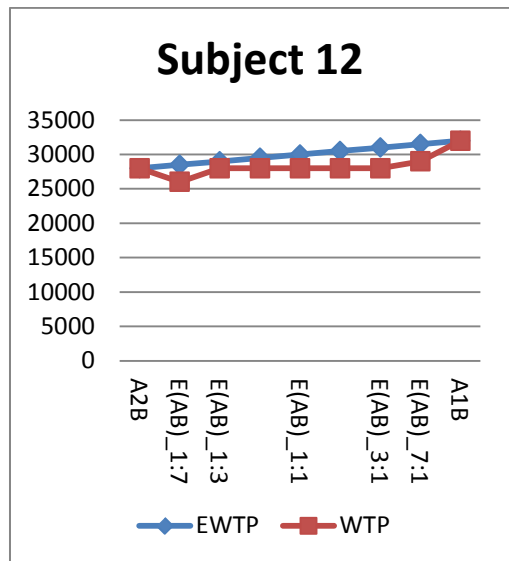
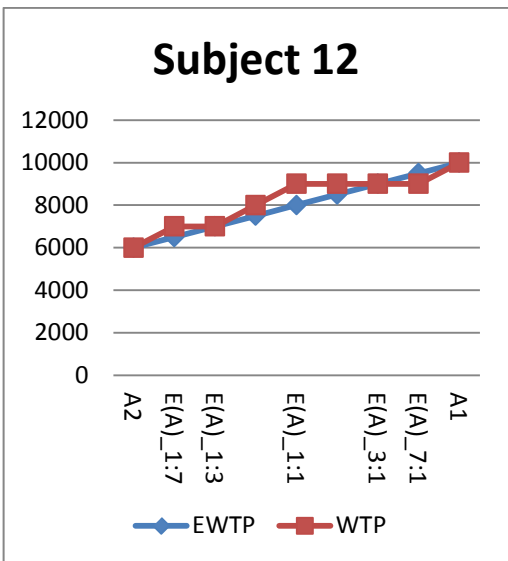
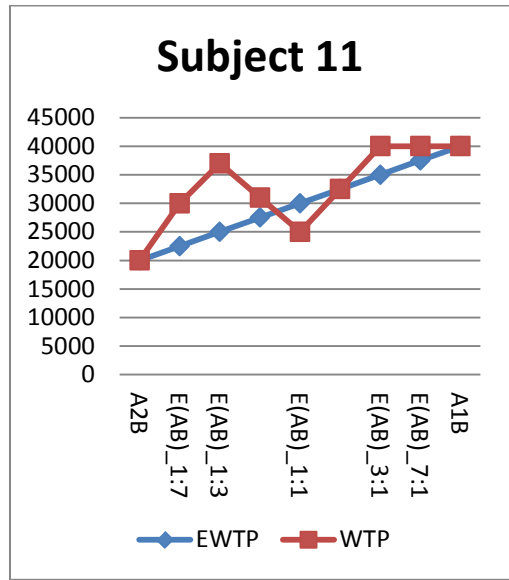
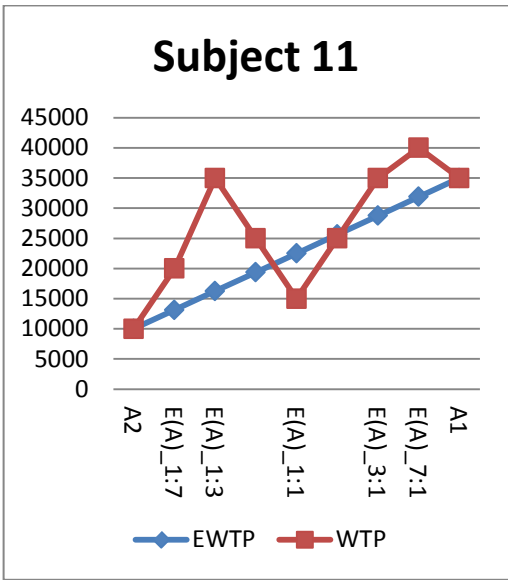
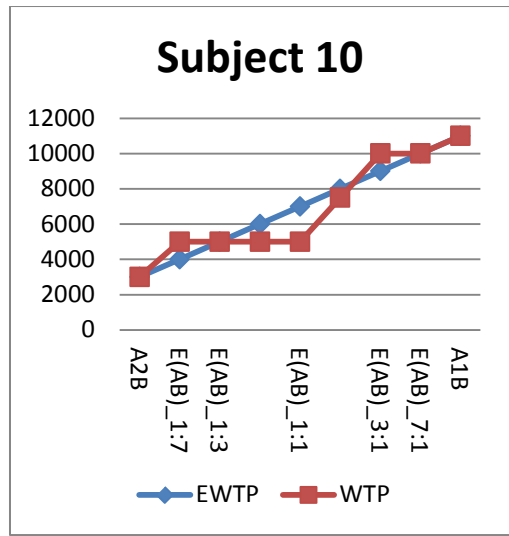
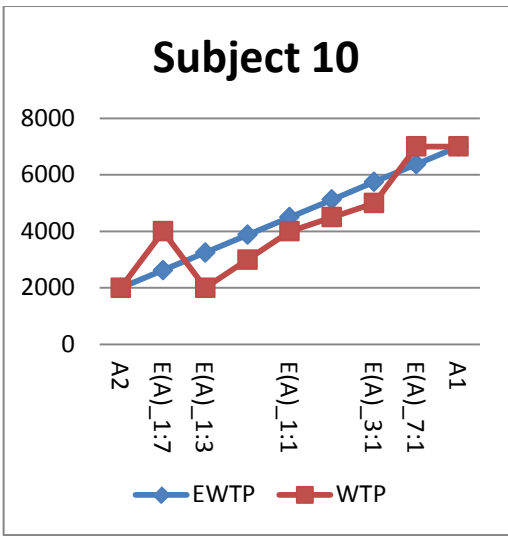


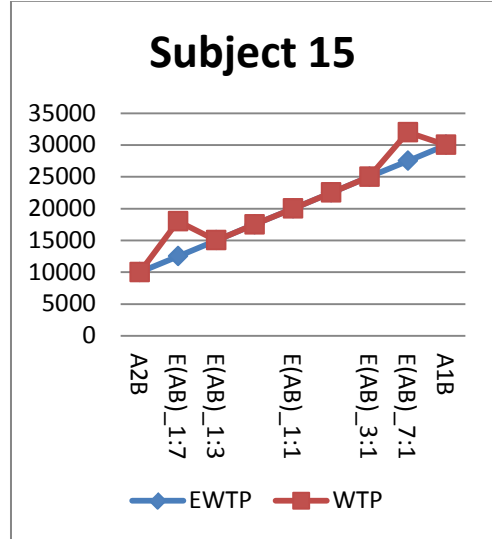
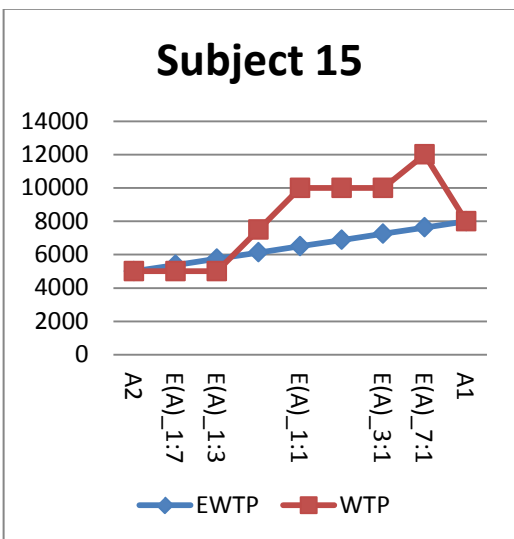
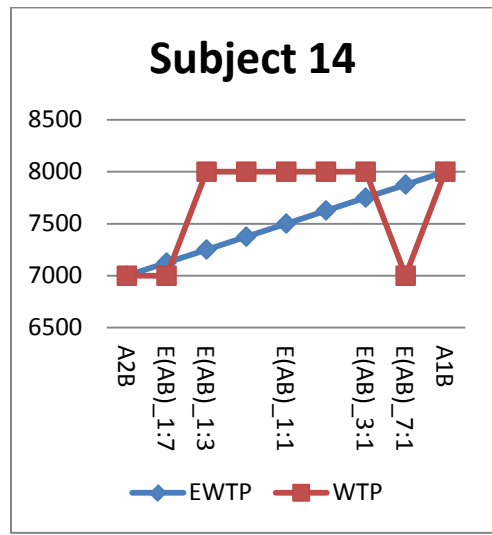
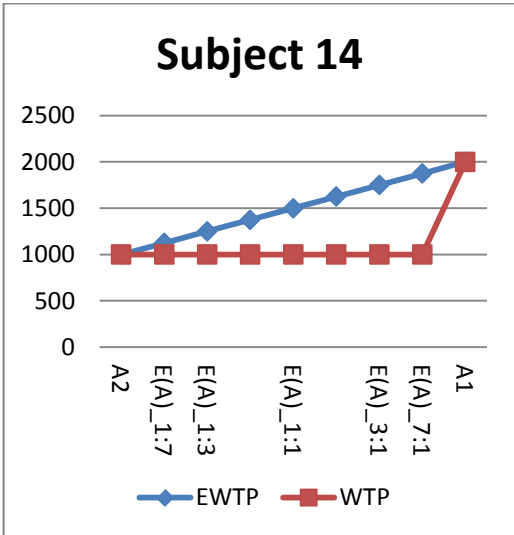
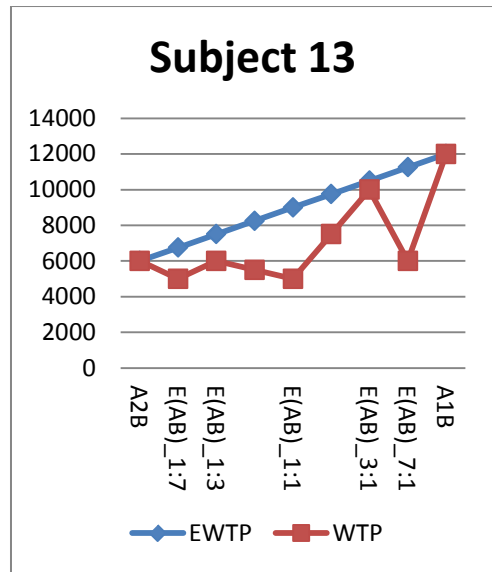
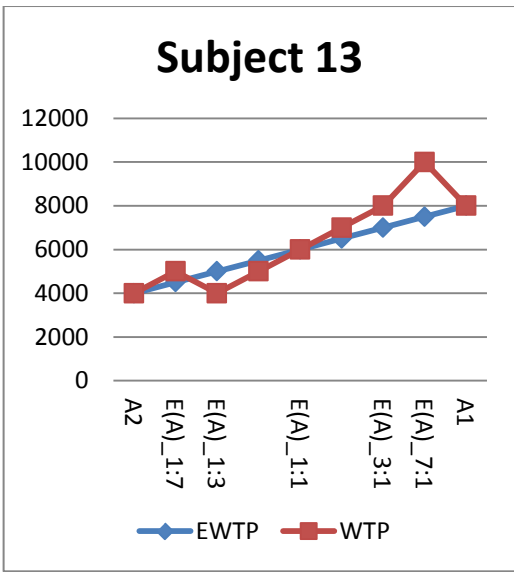
Subject 3

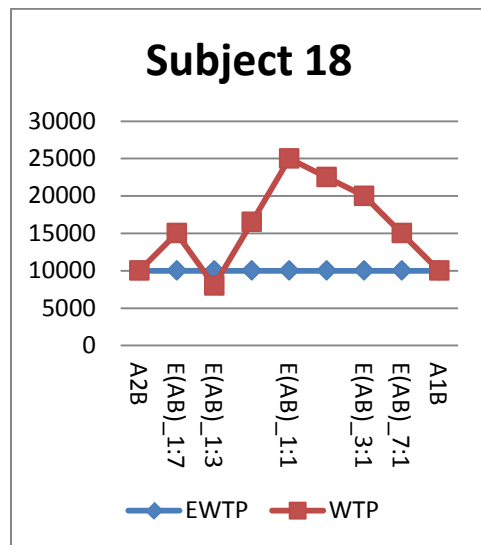
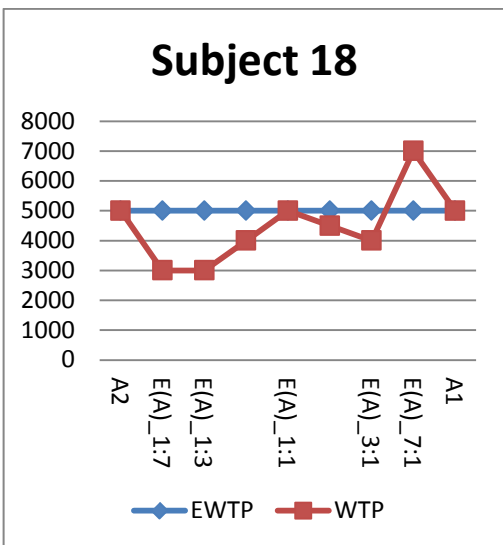
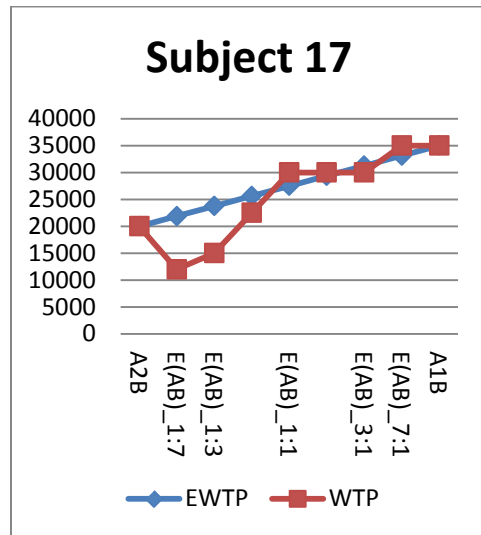
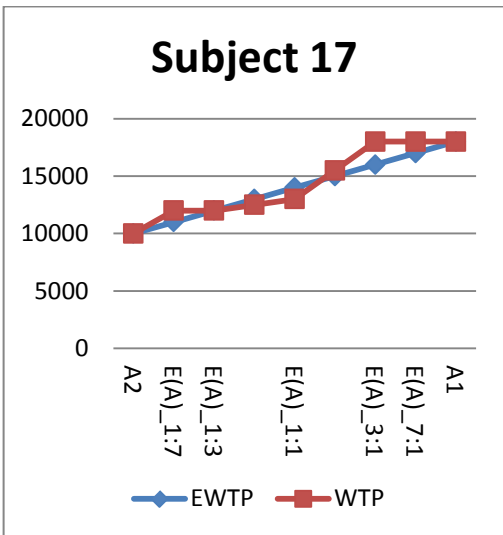
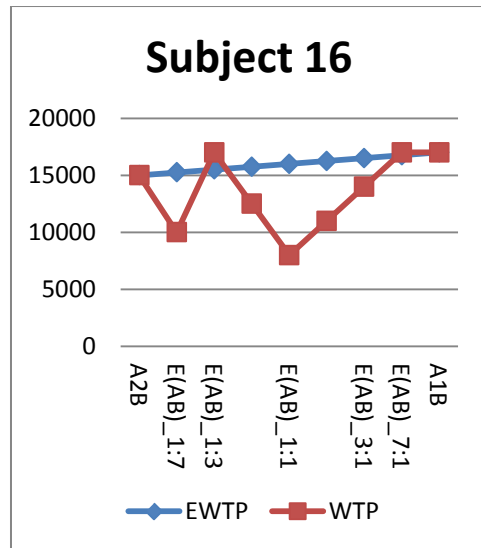
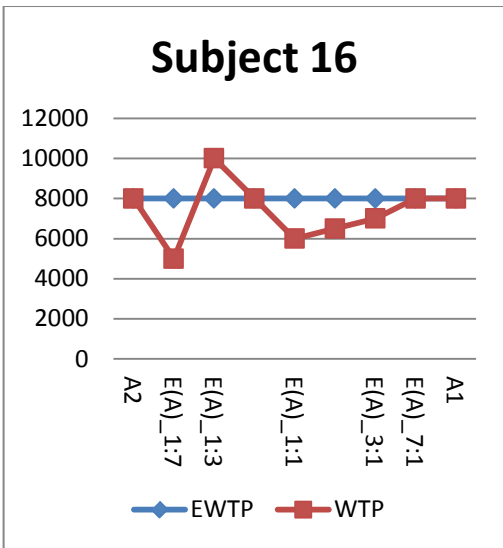


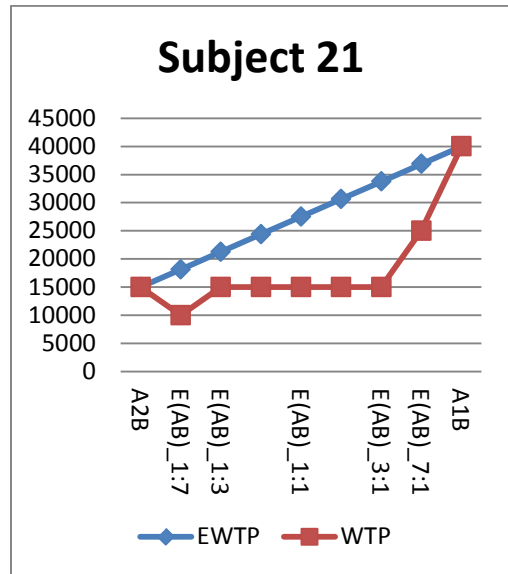
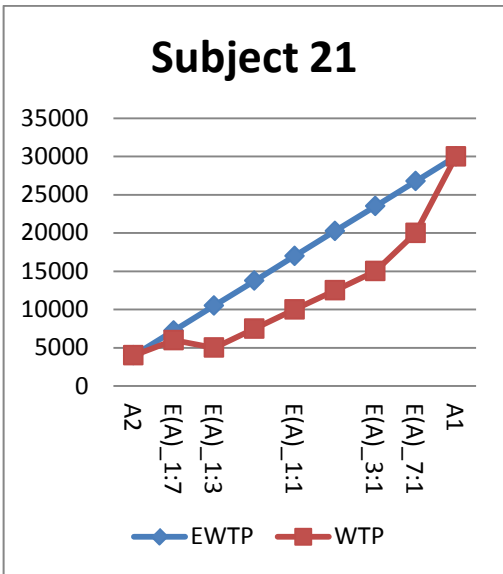
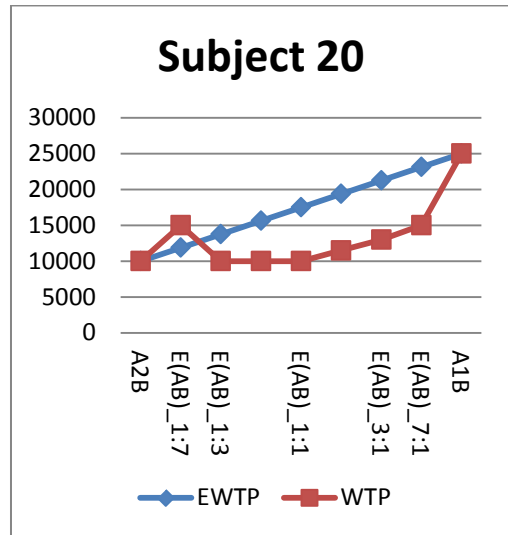
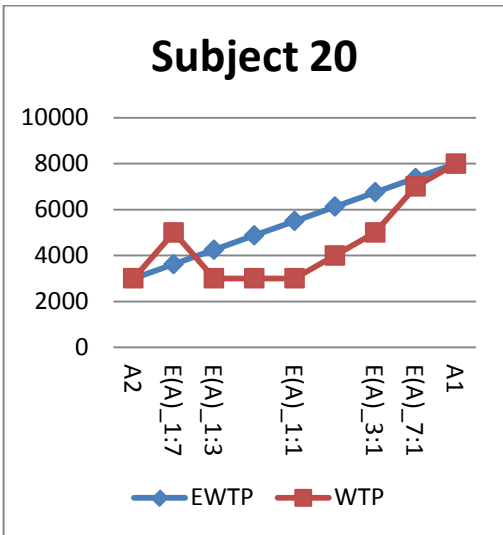
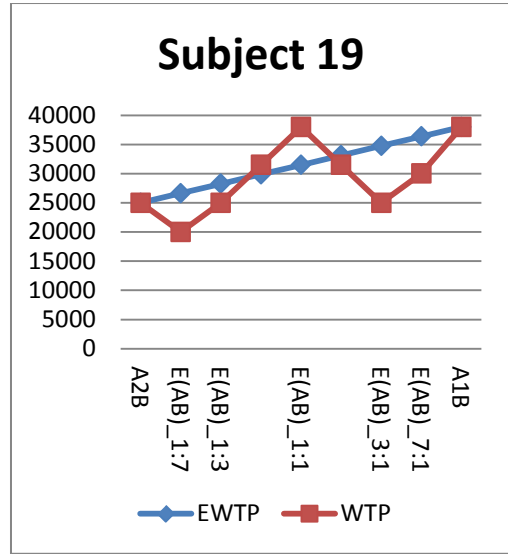
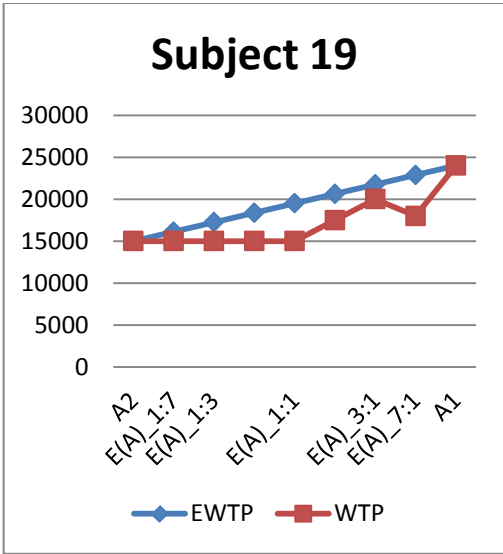


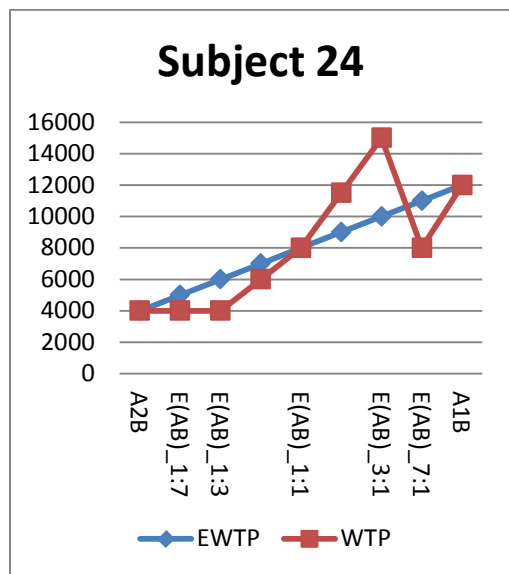
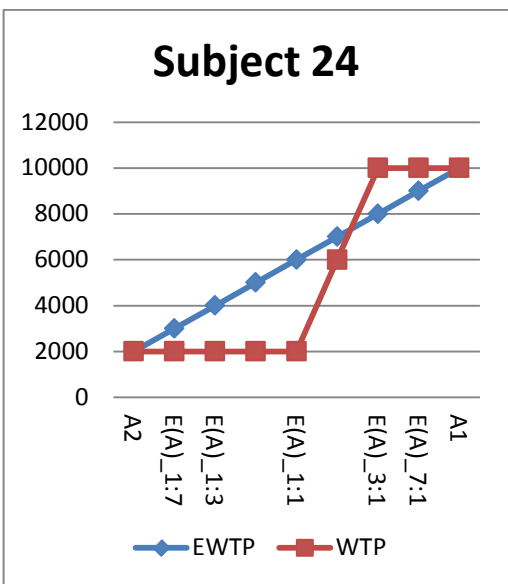
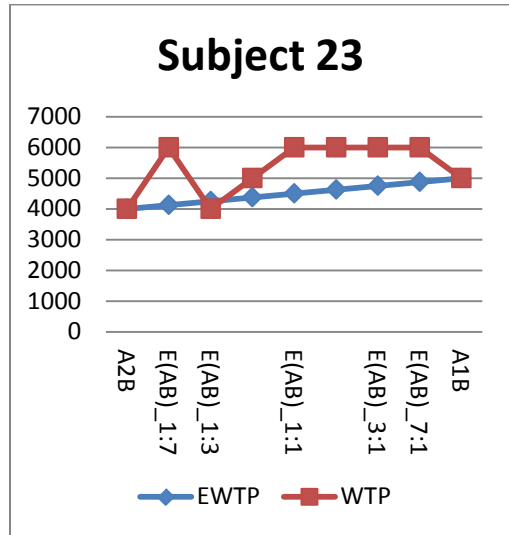
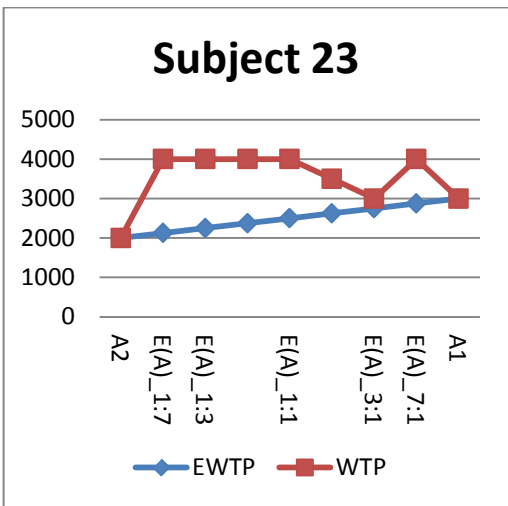
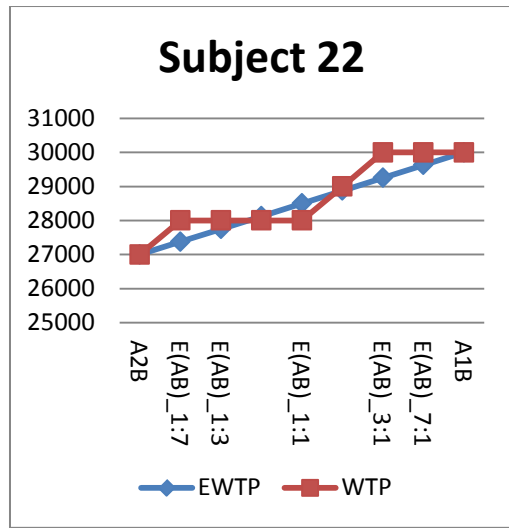
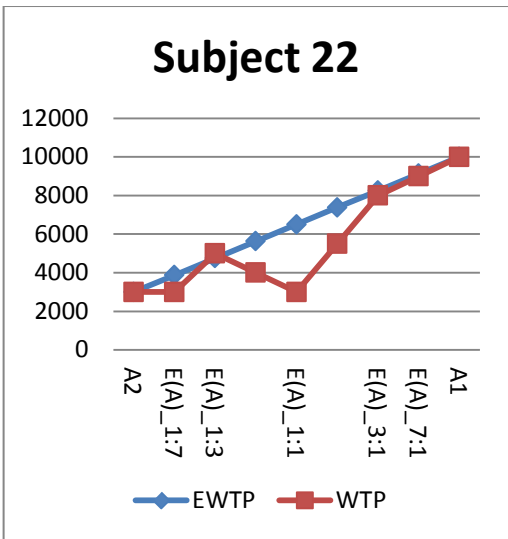


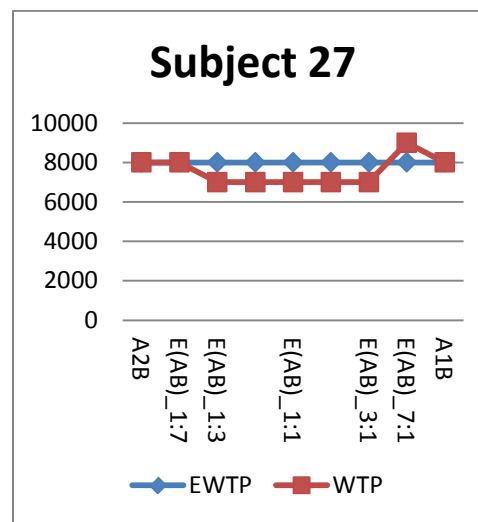
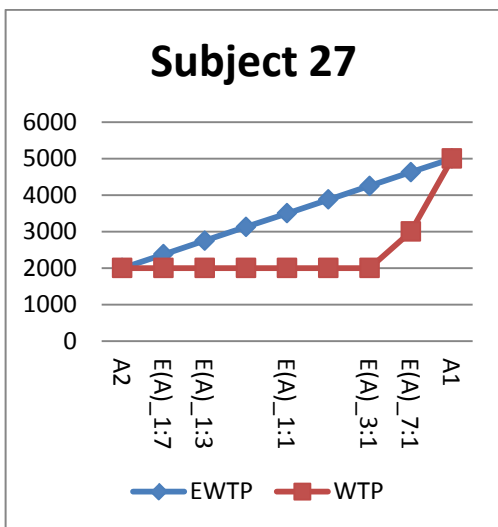
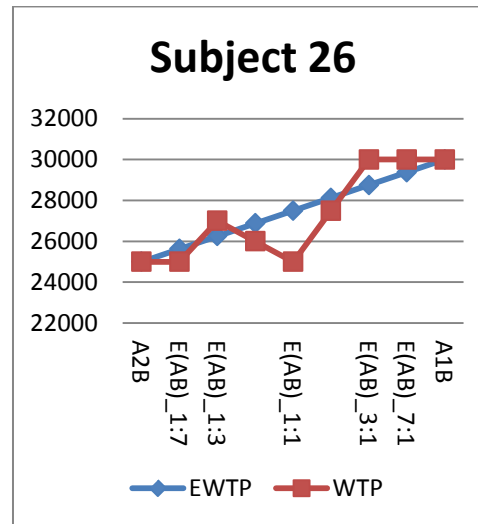
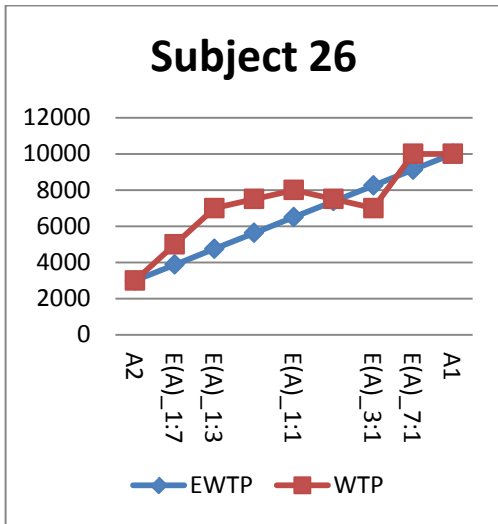
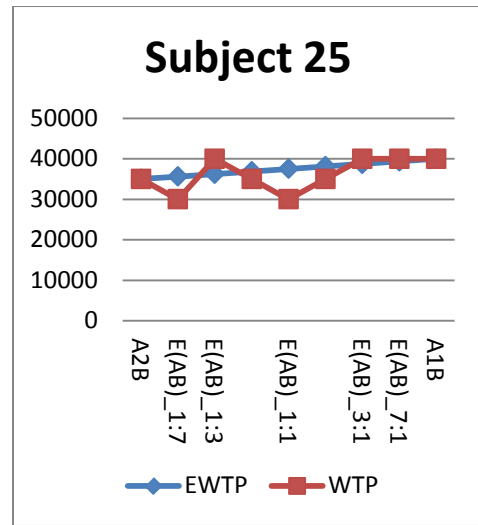
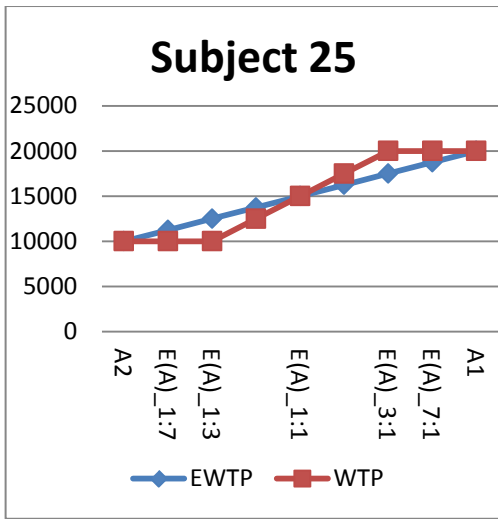


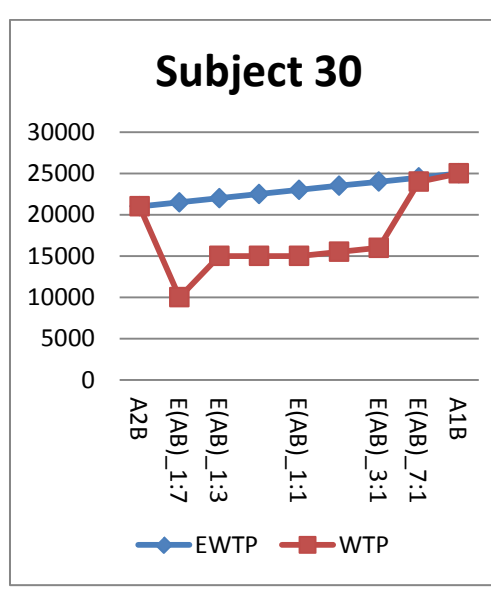
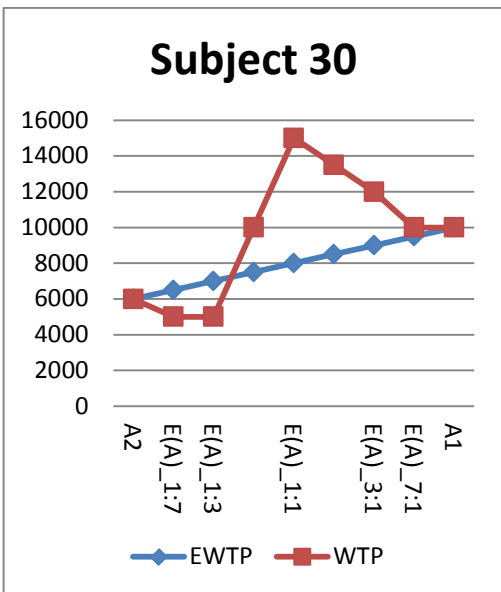
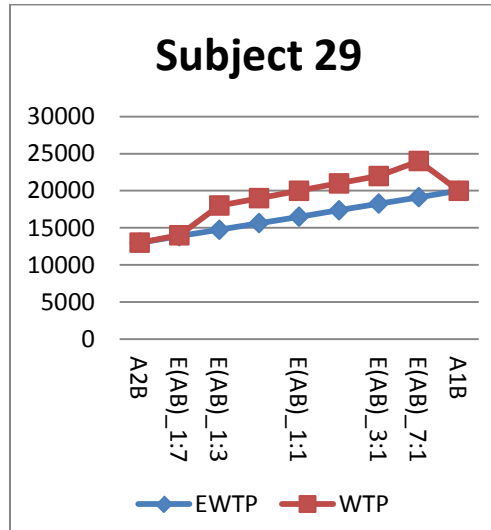
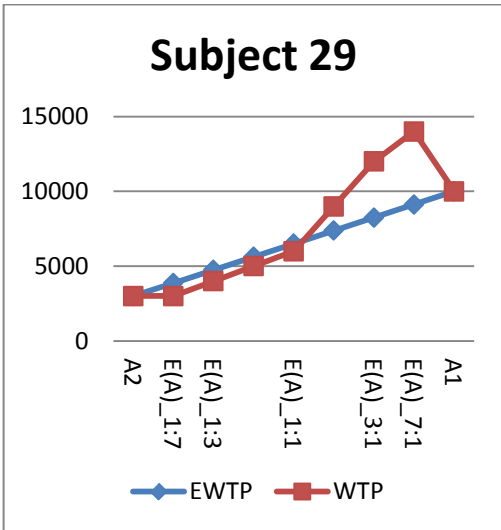
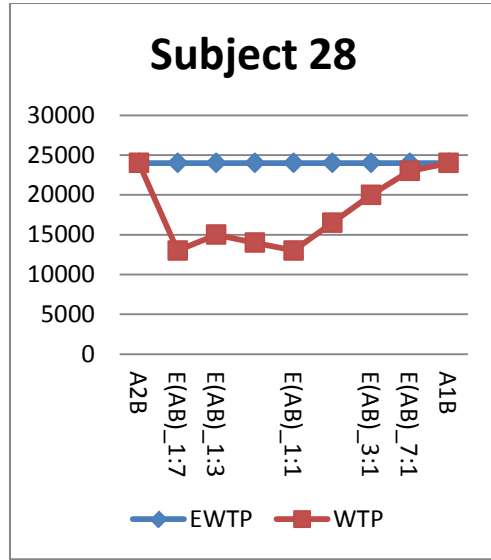
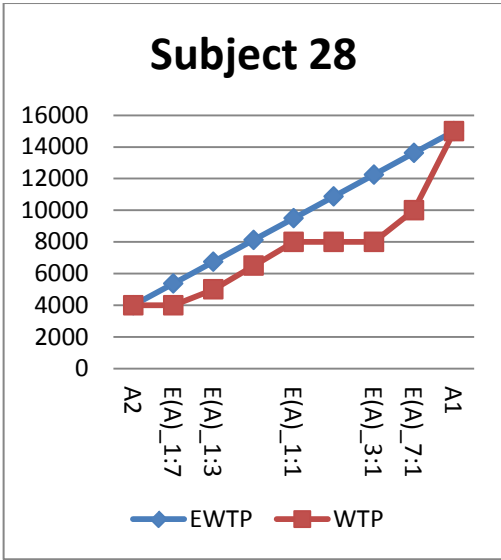


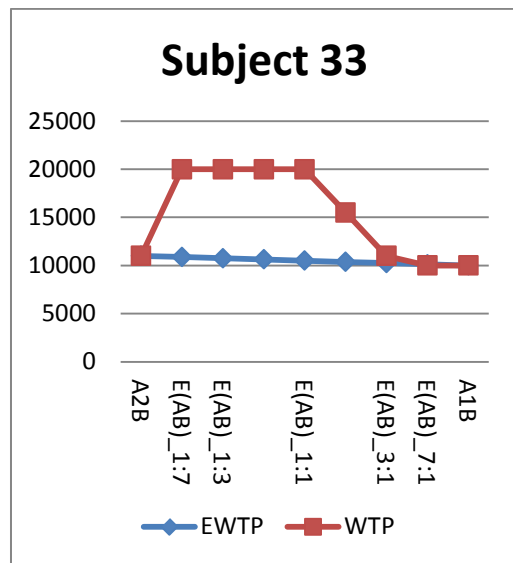
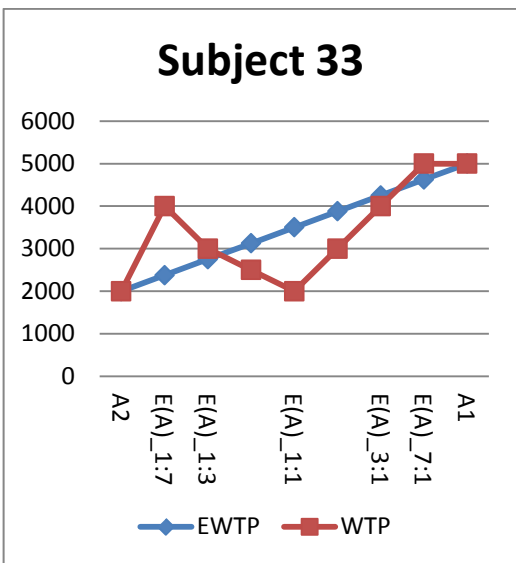
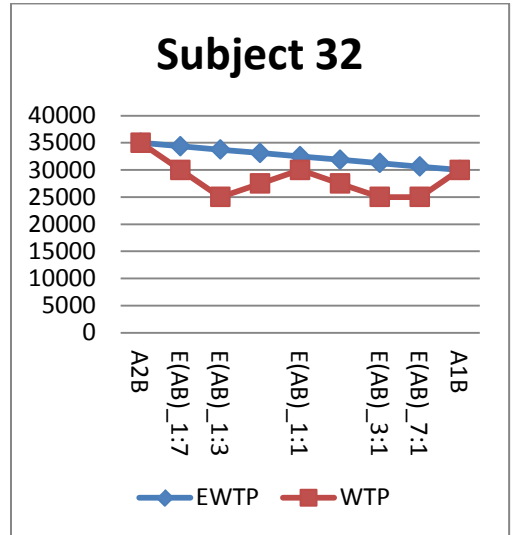
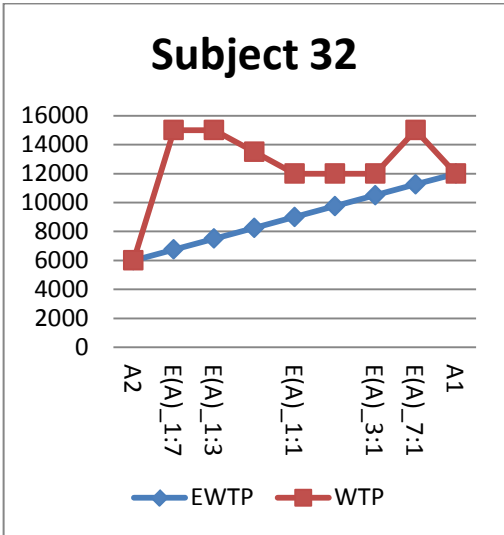
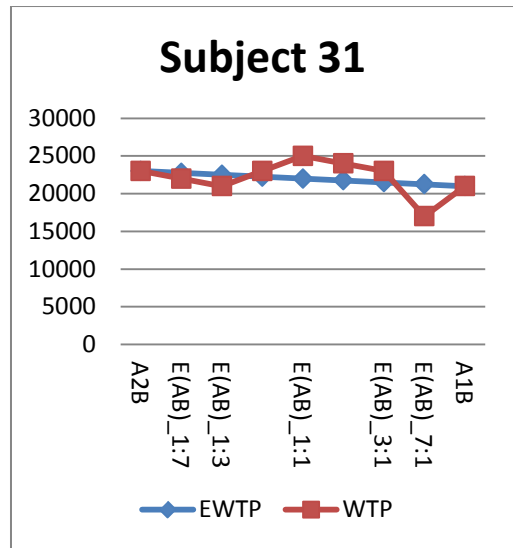
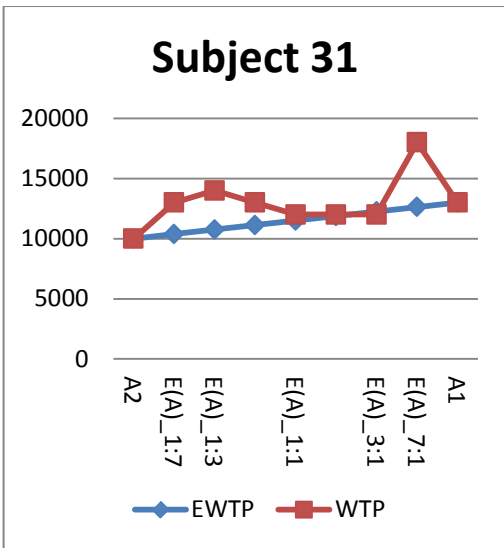


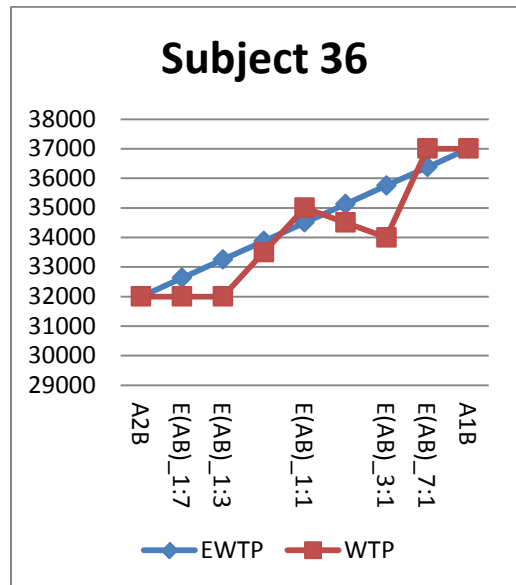
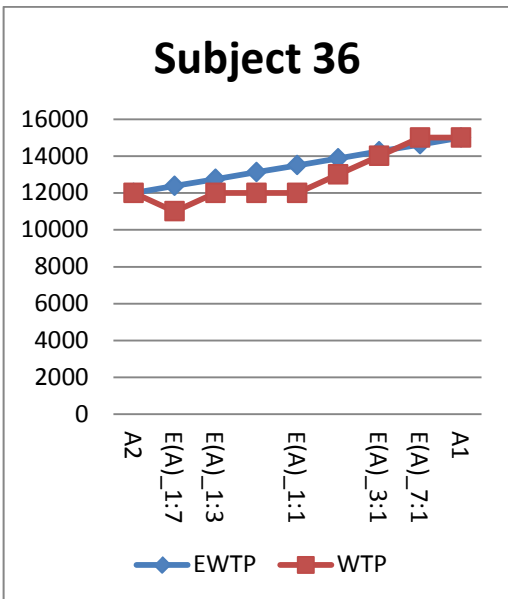
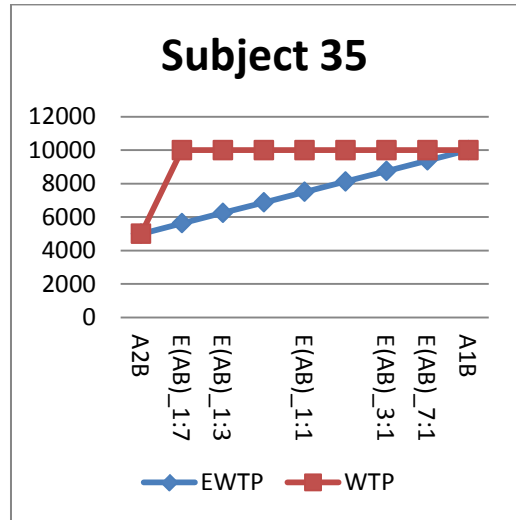
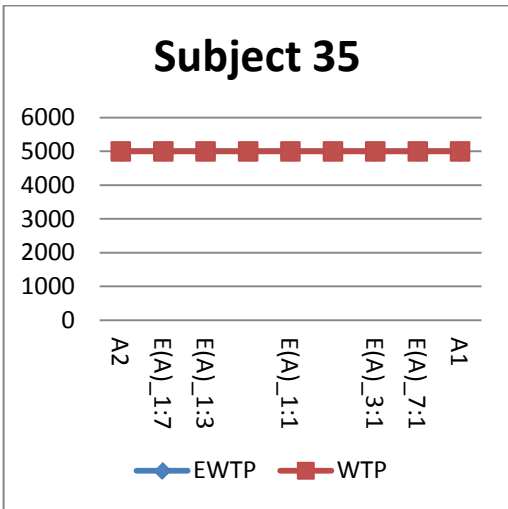
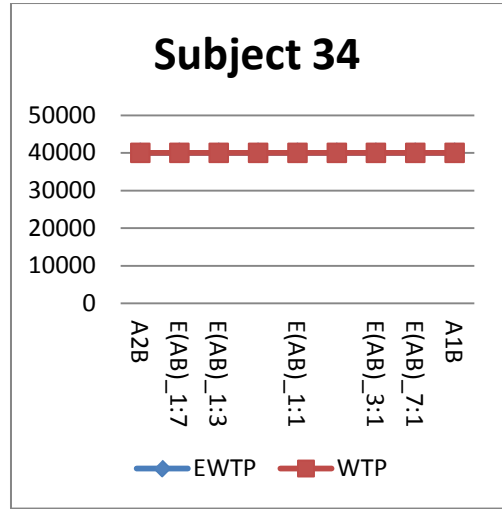
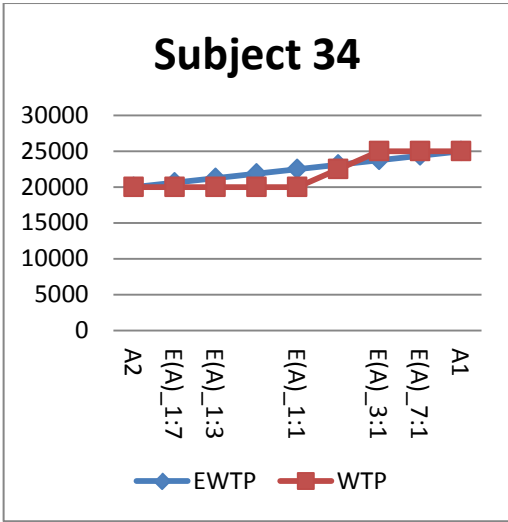


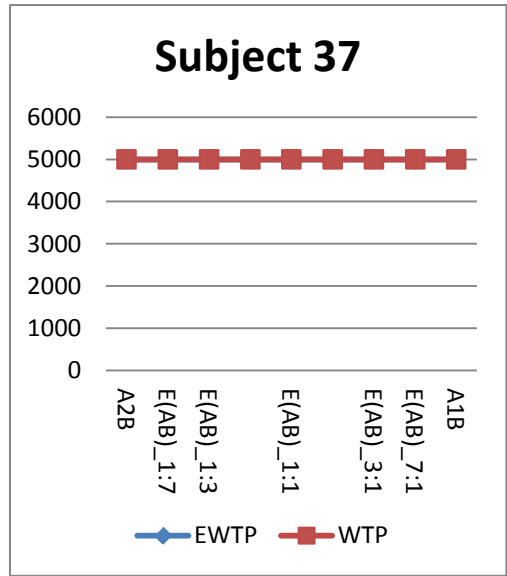
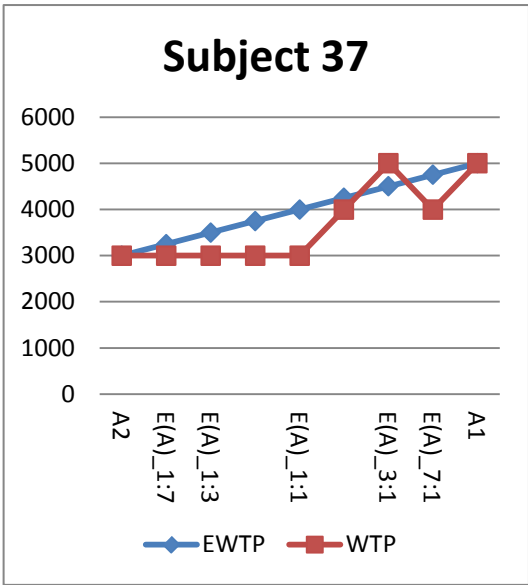






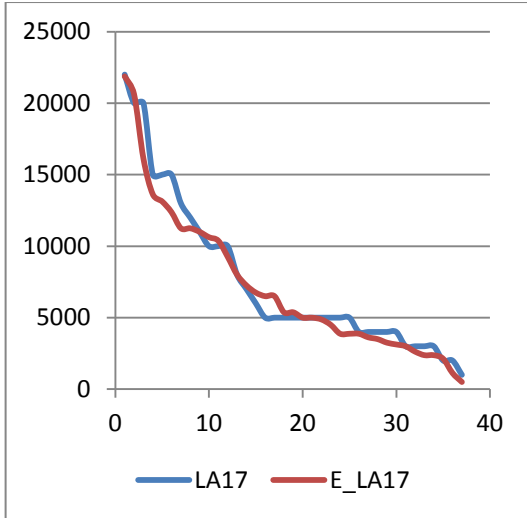




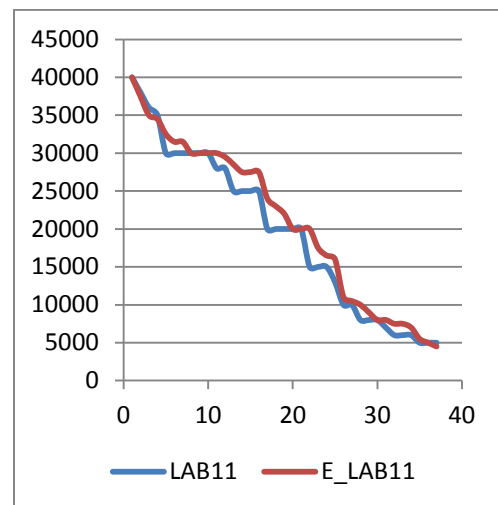
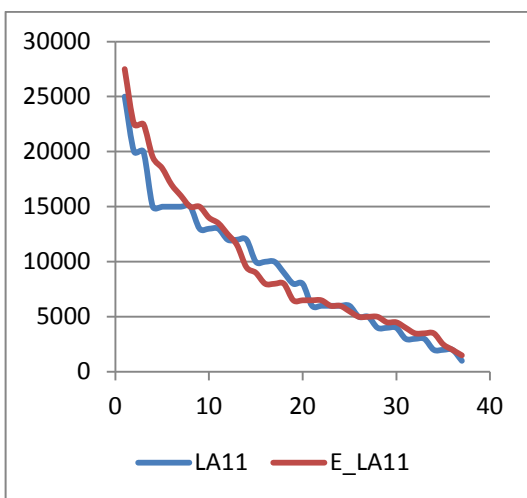
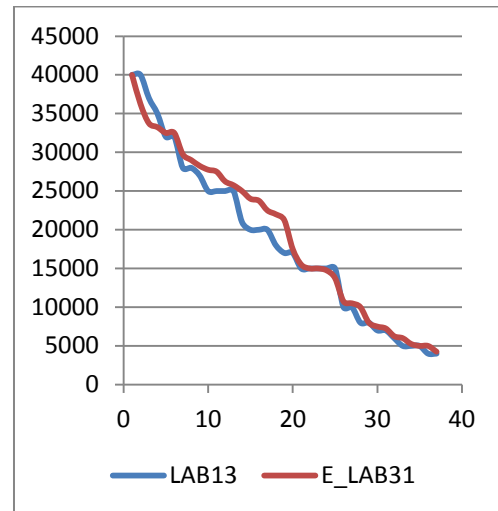
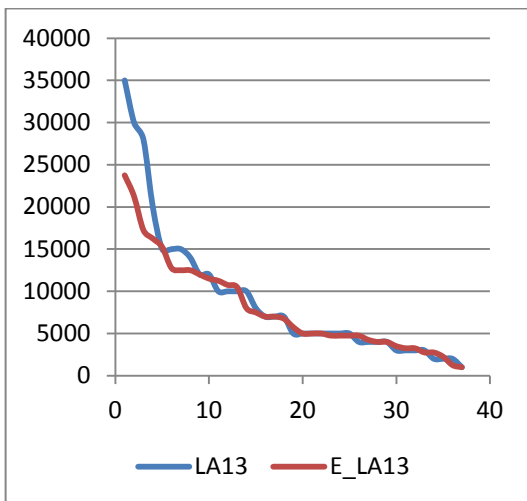
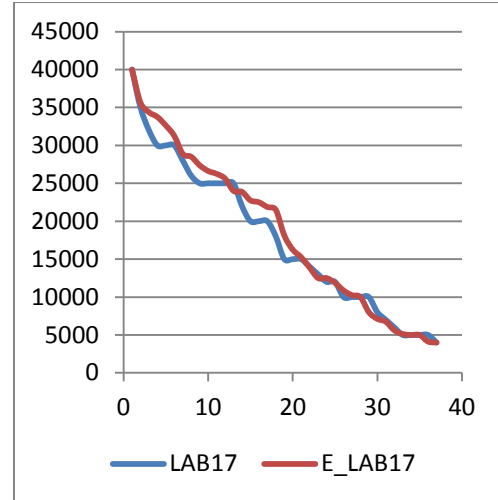


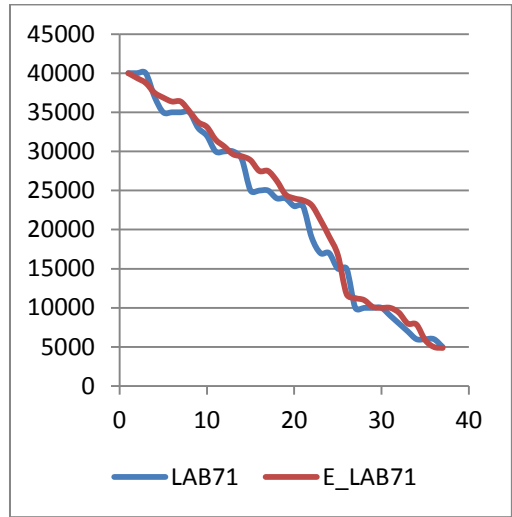
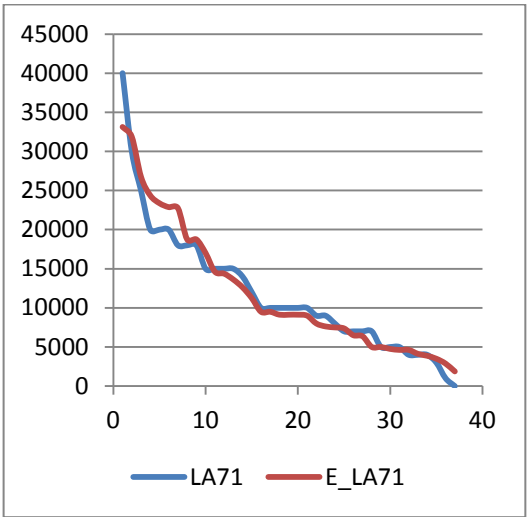
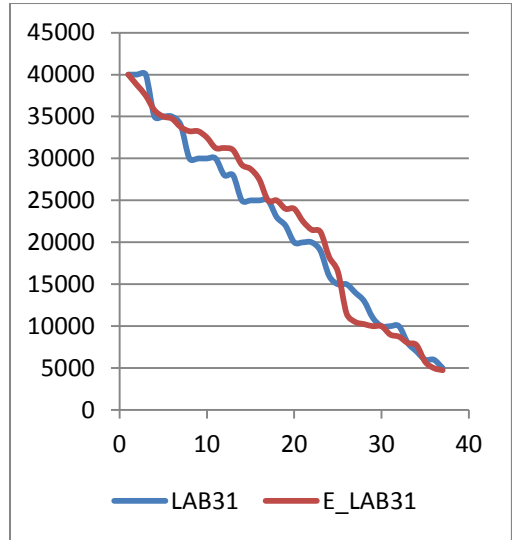
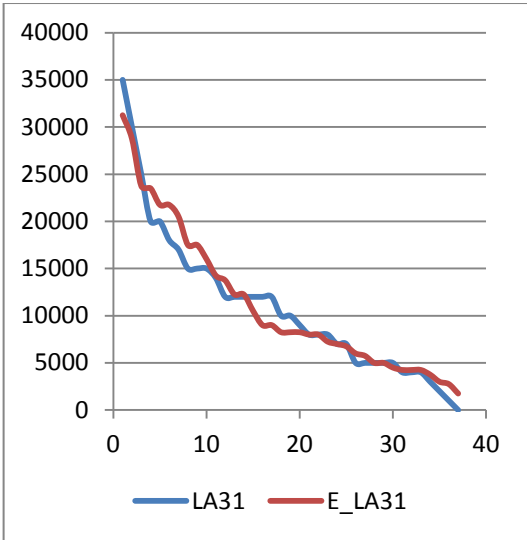
5. Demand Curve

Single Good Lottery

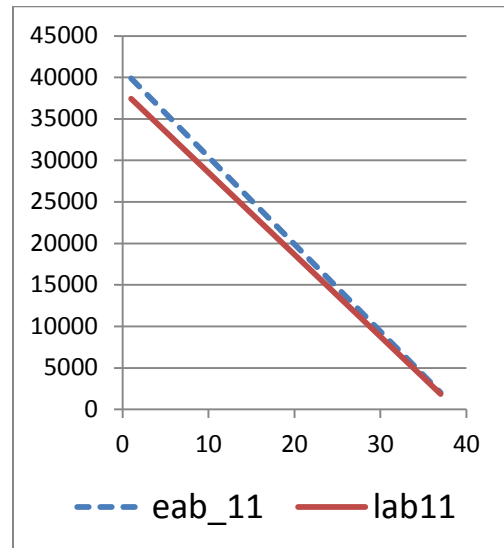
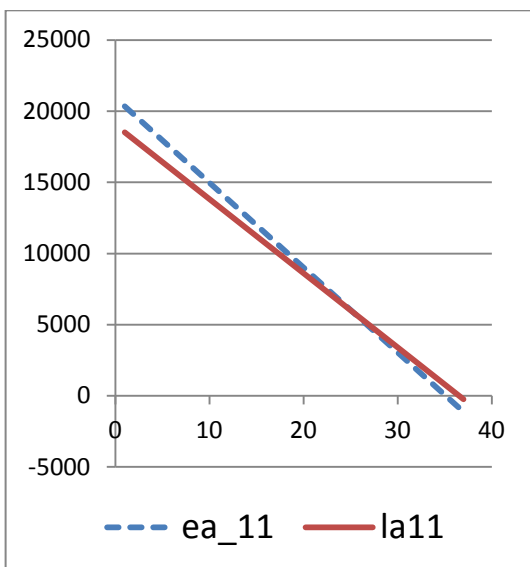
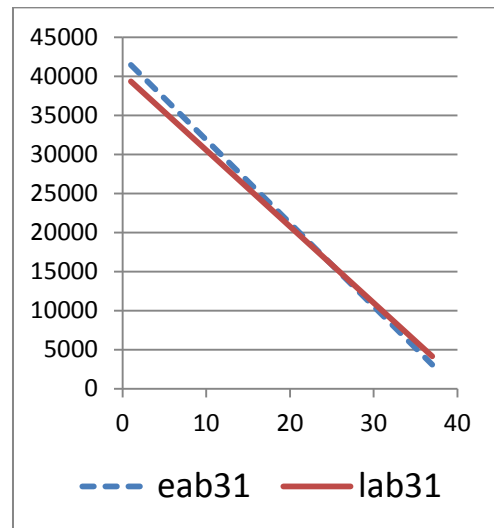
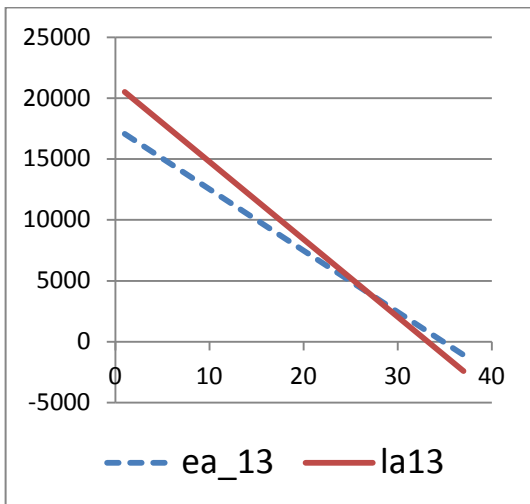
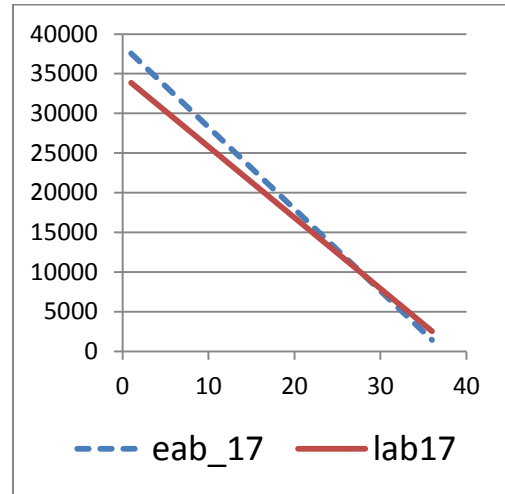
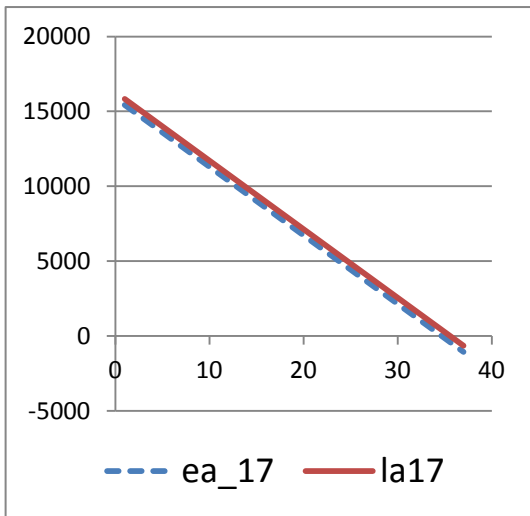


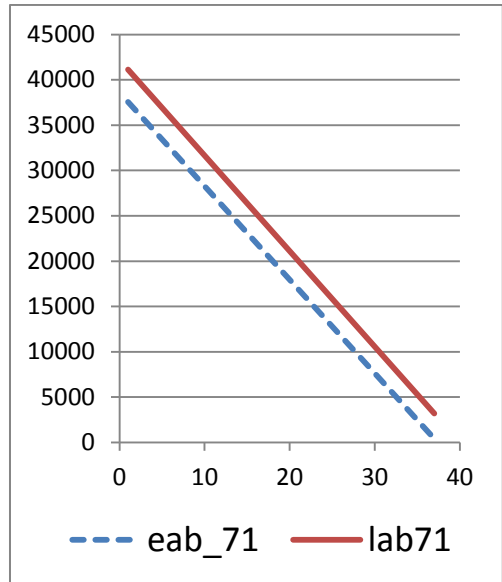
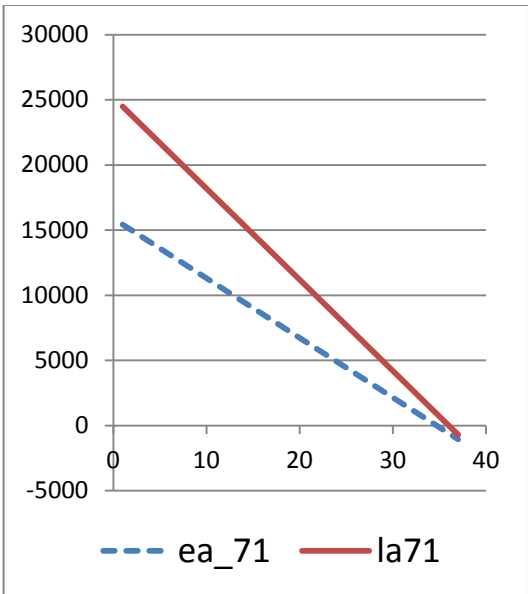
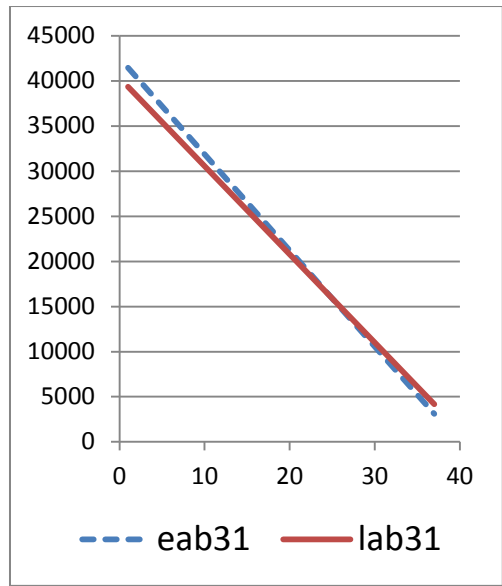
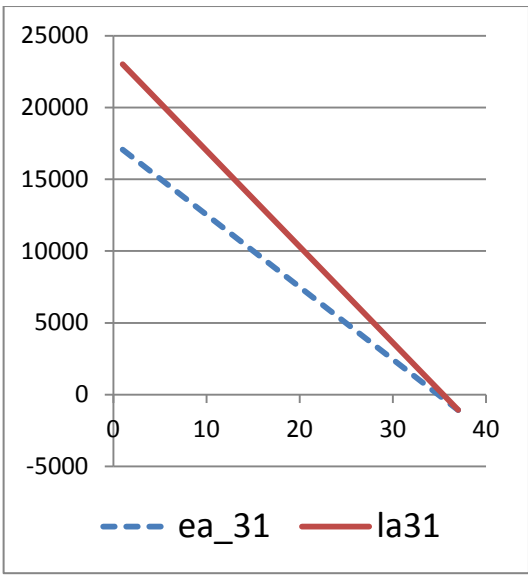
Bundle Good Lottery





6. Estimated Demand Curve






Appendix of Chapter 4





1. Hypothetical Choice Experiment

Here we ask you to choose one of the following three products. Please cross the box under the product that you choose.

FRIXION PEN	PRODUCT LOTTERY	ZEBRA SURARI
	<p>50% probability you receive Frixion Pen and 50% probability you receive Zebra Surari</p>	
<input data-bbox="398 1098 517 1157" type="checkbox"/>	<input data-bbox="943 1098 1061 1157" type="checkbox"/>	<input data-bbox="1458 1098 1576 1157" type="checkbox"/>

Reason on your choice:

Here we ask you to choose one of the following three bundle products. Bundle 1 consists of Pilot Fixion dan Kitkat Green and bundle 2 consists of Zebra Surari dan Kitkat Green Tea. Please cross the box under the product that you choose.

BUNDLE 1		BUNDLE LOTTERY	BUNDLE 2	
		50% probability you receive Bundle 1 and 50% probability you receive Bundle 2		
<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	

Reason on your choice:

Here we ask you to choose one of the following three products. Please cross the box under the product that you choose.

Iphone 5S	PRODUCT LOTTERY	Galaxy S5
	<p>50% probability you receive Iphone 5S and 50% probability you receive Galaxy S5</p>	
<input data-bbox="396 1086 519 1147" type="checkbox"/>	<input data-bbox="983 1086 1106 1147" type="checkbox"/>	<input data-bbox="1532 1086 1655 1147" type="checkbox"/>



Reason on your choice:

Here we ask you to choose one of the following three products. Please cross the box under the product that you choose.

Canon 1DX	PRODUCT LOTTERY	Nikon D4
	<p>50% probability you receive Canon 1DX and 50% probability you receive Nikon D4</p>	
<input data-bbox="396 1152 519 1214" type="checkbox"/>	<input data-bbox="972 1152 1095 1214" type="checkbox"/>	<input data-bbox="1520 1152 1644 1214" type="checkbox"/>

Reason on your choice:

Here we ask you to choose one of the following three products. Please cross the box under the product that you choose.

Toshiba PortegeZ930	PRODUCT LOTTERY	Lenovo IdeaPad U300s
	<p>50% probability you receive Portegez930 and 50% probability you receive IdeaPad U300s</p>	
<input data-bbox="398 1123 519 1185" type="checkbox"/>	<input data-bbox="958 1123 1079 1185" type="checkbox"/>	<input data-bbox="1507 1123 1628 1185" type="checkbox"/>

Reason on your choice:

2. Supplementary Survey of Choice Experiment

Thank you for your participation in WTP experiment that we have conducted on March 10 2014. As a continuation of this study, we would be very pleased if you could spare a few minutes to fill in our short questionnaire below. This questionnaire is mainly about your assessment on the nine products that we used in previous choice experiment. We really hope that all participants to fill in this questionnaire. We really appreciate your cooperation.

In the last experiment, we introduced nine products in the WTP experiment and hypothetical choice experiment. These products are Pilot Frixion, Pentel Surari, Kitkat Green Tea, Iphone 5s, Galaxy S5, Canon 1DX, Nikon D4, Toshiba Portégé Z930, and Lenovo IdeaPad U300s.

At this time, we would like to ask your assessment on the products at the time when you filled in questionnaire three months ago. Please remind yourself that we DO NOT ask your CURRENT assessment on the products but rather your assessment on the products THREE MONTHS AGO. Now, your assessment on the products may or may not have changed from your initial assessment in the past but we ask you to recall your assessment on the products three months ago.

Please answer all questions. If you have finished fill in this questionnaire, we will send a confirmation email that we have received your answers. After that, we provide a souvenir for you as our gratitude. You may take your souvenir to Mr. Jazman Ihsanuddin at Computer Laboratory, Economics Department, Faculty of Economics; University of Indonesia.

Name:

Student ID:

Have you participated in economics experiment on March 10th 2014?

- Yes
- No

Frixion Pen

Please take a look to the picture below to help you recall the product.



When you filled in a short questionnaire three months ago, how much you were familiar to Frixion Pen?

- Not familiar at all
- Less familiar
- Quite familiar
- Familiar
- Very much familiar

When you filled in a short questionnaire three months ago, how much you had interest to Frixion Pen?

- Not at all
- Less interest
- Quite interest
- Interest
- Very much have interest

When you filled in a short questionnaire three months ago, how much you understood the functions and feature of Frixion Pen?

- Not at all

- Less understood
- Quite understood
- Understood
- Very much understood

When you filled in a short questionnaire three months ago, how much you perceived the quality of Frixion Pen?

- No quality at all
- Less than standard quality
- Standard quality
- Good quality
- Very good quality

The questions repeat in quite similar way for the rest of products. Nevertheless we control for ownership status of the products that may affect subjects' assessment.

Are there any of the 9 products that you have not own or consumed before the experiment three months ago but you owned and consumed the products after the experiment. Please check the products below (you may check more than one):

- Pilot Frixion, Pentel Surari,
- Kitkat Green Tea,
- Iphone 5s,
- Galaxy S5,
- Canon 1DX,
- Nikon D4,
- Toshiba Portégé Z930
- Lenovo IdeaPad U300s.

For complete survey, please follow this link:

<https://docs.google.com/forms/d/1vwSWp5VskSaNzy38vsiyqdaqgrOxaKfagHNK5KCX6FVk/viewform>

1. Internet Links for Detailed Information on the Products

- **Iphone 5S:** <https://www.apple.com/iphone-5s/>
- **Galaxy S5:** <http://www.samsung.com/global/microsite/galaxys5/index.html>
- **Canon 1DX:** http://www.canon-europe.com/For_Home/Product_Finder/Cameras/Digital_SLR/EOS_1Dx/
- **Nikon D4:** <http://imaging.nikon.com/lineup/dslr/d4/>
- **Toshiba Portégé Z930:** <http://www.toshiba.eu/laptops/portege/z930/>
- **Lenovo IdeaPad U300s:** <http://shop.lenovo.com/us/en/laptops/ideapad/u-series/u300s/>