

# **Exploring the Willingness and Ability to Pay for Paratransit in Bandung, Indonesia**

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## **Abstract**

*This article explores the willingness and ability to pay of the paratransit user. Paratransit (jitney) in this study refers to a public mode of transport of passengers that is owned and operated by private individuals or very small enterprises. The data were collected from a survey in Bandung, Indonesia, and analyzed using ordinal probit and binomial logistic regression. The findings illustrate a gap between the values of willingness and ability, and also reveal that people have different valuations regarding their related perceptions. The analysis explains the groups of users who have a tendency to assign a higher value, including the characteristics of users who agree with higher fare increments. This study also discusses the policy implications of this analysis.*

## **Introduction**

There is a growing awareness among transport policy makers that public acceptance and support of transport-related decisions are essential for the success of such decisions. Long-term policies on the physical conditions, as well as the fiscal, budgetary, and strategic issues of transit systems, are particularly in need of public and user support (Shadewald et al. 2001, Koushki et al. 2003). Indeed, fare determination for public transport is crucial as well. Unfortunately, there is little consideration given to users in the fare determination process in developing

countries, which results in an inability to confirm user willingness and ability to pay the fare.

The predictability of consumer contributions has two elements, namely consumer willingness and ability to pay (Al-Ghuraiz and Enshassi 2005). In economics, the consumer's willingness to pay (WTP) is the maximum amount that a person would be willing to pay for a service rather than do without it (Al-Ghuraiz and Enshassi 2005) or would give up in order to enjoy an improvement in quality (Whitehead 2005). The WTP concept is useful in visualizing the viewpoint of users of a system (Khisty and Lall 2003) and as the key component of the benefit–cost evaluation (Hoehn and Krieger 2000, Al-Ghuraiz and Enshassi 2004). Further, a positive WTP indicates not only a positive attitude toward the thing valued, but also has the advantage of indicating the strength of that attitude constrained by factors such as an ability to pay (Jones-Lee 1993, Walton et al. 2004). Meanwhile, the ability to pay (ATP) principle, in addition to the benefits principle, is one of the normative approaches underlying the theory of taxation (see, for example, Musgrave and Musgrave 1975, Deb et al. 2003). The ATP principle means that for a public project, those who are able to afford to pay more should pay more. The most popular variant of the ATP principle is called the equal marginal sacrifice principle (Musgrave and Musgrave 1975).

A usual assumption is that individuals who declare themselves willing to pay the price should, somehow, be able to do so (Russell 1996, Mataria et al. 2006). In fact, as Senbil and Kitamura (2004) stated, individuals are apt to report values below the real value that can be paid, because they might feel more comfortable leaving a gap that might be traversed in the case of increased risk, and they might gradually increase the value or suddenly switch to the real WTP when their reported values turns out to be of no use. Thus, the relationship between WTP and ATP remains a matter of debate. Some economists argue that the two notions should be strongly distinguished (Mataria et al. 2006).

The basic motivation for this study is the question of how users perceive the fare based on their W/ATP. Thus, this study explores the willingness and the ability to pay of the user of paratransit (jitney). Paratransit in this study refers to a public mode of transport of passengers that is owned and operated by private individuals or very small enterprises. It is a well-known mode of urban transport in Indonesia as well as in the Philippines, Thailand, and in some African countries. It refers to various local names and types of cars, vans, and minibuses with a capacity of 12–14 seats. They are available to everyone, unlike in the U.S. context, where the term

tends to refer to government-subsidized transport for the elderly or persons with disabilities. This study employed a questionnaire survey to investigate the opinions of paratransit users in Bandung, Indonesia. The users were asked to express their W/ATP regarding the available services and funds in their household. The user acceptance and the amount of fare increment were also explored in order to express the relationship between fare and W/ATP. This article is not intended to estimate theoretically the amount of WTP and ATP solely, but intends to apply the concept into the practice of fare determination, i.e., exploring the range of financial capability, shown by the value of ATP and WTP. Based on the author's knowledge, the study of this topic in Indonesia using a similar approach is very rare, indeed perhaps not available at all. Thus, the author cannot refer to prior studies regarding this topic.

In the sections that follow are a concise explanation of the terminology of ability and willingness to pay, including the underlining debate; data collection and description; estimation results of the models, which are accompanied by the significance tests; and a conclusion and outline of the policy implications of this research.

## **Ability and Willingness to Pay**

### ***Economic Framework***

The basic premise underlying the use of economic variables to reflect the impact on users is that the demand function for a group of users shows the values they place on different levels of service. Thus, the demand function expresses the users' relative willingness to pay for different service levels (Manheim 1979). There are three alternative views on how to measure the benefit to users: the gross-benefit view (corresponding to the willingness to pay argument), the consumer-surplus view, and user-cost view (see Manheim 1979 for more detail explanation). The important limitation of these measures of user benefit is that, if used carelessly, they are biased toward upper-income travelers (Manheim 1979). The general effect is that projects benefiting high-income travelers would show greater user benefits than those benefiting low-income users. This is undesirable where it explains the concept of willingness to accept (WTA) (Manheim 1979). More detailed discussion regarding WTA can be found in Senbil and Kitamura (2004), which is rooted in compensating variation (CV) and equivalent variation (EV) as approaches to the changes in consumer surplus (Hicks 1943, 1956).

Moreover, during the past few decades, a shift away from the narrow view of traditional neoclassical economics has taken place in the theoretical foundations of microeconomics in general and household behavior in particular (Linscheidt 1999). Firstly, there is the new consumer theory from Lancaster (1966a, b), which is discussed in detail by Roth (1979). This theory introduces the notion of goods' characteristics; accordingly, the problem of choice can be understood properly by accounting for the fact that characteristics can be obtained through the purchase of market goods, which in turn requires money (Jara-Díaz 1998). The fundamental idea of this approach is that market goods and services are merely inputs of the consumption process. The commodities or needs, not the goods themselves, are what the consumer really cares about. Consequently, the utility function a household maximizes is related to these commodities (Linscheidt 1999). Thus, the satisfaction of a specific need does not depend on a single market good (Lancaster 1966a).

Second, there is the concept of bounded rationality questioning the view of households as perfectly-informed maximizers. Thus, if we assume the more realistic concept of bounded rationality, including incomplete information, cognitive limits, and satisfaction (Simon 1957), it becomes obvious that consumers' choices are probably inefficient most of the time (Linscheidt 1999). Accordingly, behavioral or social innovation means that a household introduces a new combination of purchased market goods, time, and human capital to obtain a higher commodity output with its given income. As a result, consumption patterns seem to be much more flexible in the long run than traditional neoclassical theory suggests (Linscheidt 1999); where there are externalities in consumption, the decision to consume is essentially dynamic in nature (Kemp 1999).

Moreover, there is development in normative and behavioral economics in the way that they understand the human decision-making process, emphasizing the accumulation of evidence regarding the disparities in the measures of values (see Knetsch and Sinden 1984, Loomes et al. 2006, and Sugden 2003 for more discussion regarding this topic). Sugden (2005) states that the preferences that govern people's actual behavior are often incoherent and unstable. Indeed, psychologists have shown that people often treat gains and losses asymmetrically and tend to require a substantially larger increase in wealth to compensate for a loss than the amount they would be willing to pay for an equivalent gain (Guria et al. 2005).

## **Relationship between WTP and ATP**

If a person expresses a WTP for a service, and even if she/he proceeds to pay for it in the real world, such stated and revealed behavior may not be automatically interpreted as proof of affordability. Payments might be made at considerable social cost, obliging the person to give up essential consumption such as education, just to be able to acquire the service (Mataria et al. 2006). Indeed, when confronted with a severe social and/or economic exogenous shock, such as rapid impoverishment, individuals may begin a process of re-prioritization of what is important and what is not, leading them to underestimate issues in which they were previously expressing relative interest (Mataria et al. 2006). In these situations, the role of ATP becomes clear, which underlines the difference between WTP and ATP.

Indeed, it seems fair, even for the poor, to give a high value of WTP for good services, even though they are unaffordable; as Ajzen et al. (2000) and Walton et al. (2004) have stated, WTP values are based on psychological considerations. Also, it seems fair for the poor to express a very low ATP, even for very good services, since ATP is defined as the real allocation or sharing from his/her income in order to buy the service, which limits the capability to buy that service. It is highly possible that someone shows a high WTP while simultaneously showing a low ATP. This means that the poor have a high appreciation for the services that are too expensive for them to afford. This is a possible situation for “captive” riders, especially the poor. In the case of high income (generally “choice”) riders meeting an unsatisfactory or low service quality, they will be highly likely to have a very low WTP, although in fact they have a high ATP.

## **Data Collection**

### ***Materials***

The data used to study the users’ ability and willingness to pay were collected using the questionnaire devised by Hadi (2004). The questionnaire was distributed to the respondents using simple random sampling both off-board (in terminal) and on-board. To eliminate bias, the questionnaire was distributed in both peak and off-peak periods and on both weekdays and weekends. The questionnaire was distributed to paratransit users taking the Kebon Kelapa – Ledeng route, which is 26km long, the median length for all paratransit routes in Bandung. This one route was selected as the focus of the analysis of users’ perceptions of fares and how they value the service, because there is a different fare for each route. The sample size was 345 respondents, which were selected as 5 percent of users taking this route.

There are 245 vehicles operating on the route, and each vehicle operates 12 round trips per day. The number of passengers per trip is 12.

All questions were constructed based on the questionnaire structure of including a detailed explanation of the research question, which means that the questionnaire has validity. Moreover, internal consistency of the questionnaire was tested using the alpha-cronbach test. This is a test of the consistency of responses to all the items (Sekaran 1992) and measures the extent to which item responses obtained at the same time correlate highly with each other, where the widely-accepted cut-off is that alpha should be 0.70 or higher for a set of items to be considered a scale (Garson 2006). The test has shown that the value of alpha-cronbach was 0.87, which means that the questionnaire is reliable.

In this study, the questionnaire consisted of four parts. The first part asked respondents to express their social demographic data. The second and third parts were about the journeys of the users and the perceived service quality. The last part asked respondents to assess their financial situation, including expressing their W/ATP under several conditions, such as the level of service of paratransit and their family's financial conditions. In this part, respondents were asked to choose a range of sums of money that they consider to be the most suitable for their W/ATP by referring to those conditions. The typical question of WTP in this financial part was, "How much money are you willing to pay for the current paratransit's service quality?", while the question of ATP was "How much money do you think you are able to pay for the current paratransit's service quality?" By asking about these current conditions, the questions explored revealed preference, except for the fare increment question. The last question asked about respondents' agreement with fare increments when there is an improvement in service quality. If the respondent agrees, he/she was asked to express the amount of the increment they agree to be reasonable.

### ***Descriptive Statistics***

Males comprised 56.5 percent of respondents, and 80.3 percent of respondents were not yet married. The age distribution was dominated by young users, age 25 or younger (73%). The highest education of the respondents was Diploma or higher (39.4%). Regarding ownership of vehicles, 43.8 percent of the respondents' families did not own a car.

The highest percentage (41.7%) for the category "Reasons for making use of paratransit" was the family not owning a car. Other users (19.1%) stated that paratransit was faster, more comfortable, and safer, while 22 percent of respondents perceived

that paratransit is a cheaper mode of transport. The trip purpose for using paratransit was for study (58.6%), work (20.0%), shopping (16.2%), and other reasons (5.2%). The big proportion of students using paratransit is a somewhat unique characteristic of this mode in Indonesia, which is confirmed by several studies (Joewono and Kubota 2007). The monthly expenses of the users was dominated by a group owning less than 0.5 million IDR (58.6%). The transportation expenses per month were less than 100,000 IDR (62%). As a way of comparison, in 2004, the value of one USD was equal to 9,400 IDR, while the GDP of Indonesian per capita at this time was 3,500 USD. More information regarding the respondents has been reported in Joewono (2008).

## **Model Estimation**

As there are different types of data - ordered values and binary - two kinds of analyses are employed. The value of A/WTP is an order, thus the ordinal probit regression model is used in this case. This analysis intends to explore users' stated values. The following analysis is binomial logistic regression, which is employed to explore the characteristics and predict the user agreement in regard to the fare increment, including its amount.

### ***Ordinal Probit Regression***

Tables 1 and 2 provide the parameter estimates using ordinal probit regression, and each table consists of two models. Detailed explanation regarding ordinal probit regression is available in Kennedy (2003) and Greene (2003). Table 1 consists of the models for WTP<sub>q</sub> (WTP based on quality perception) and ATP<sub>q</sub> (ATP based on quality perception), while Table 2 consists of WTP<sub>f</sub> (WTP based on financial perception) and ATP<sub>f</sub> (ATP based on financial perception). Detailed explanation regarding the analysis of whether there is a difference between the value of WTP and ATP and between the value based on quality perception and financial perception can be found in Joewono (2008). The model fit is explained by the difference between the log-likelihood for the model with the estimated parameters and the log-likelihood with just the thresholds (intercepts). Its significance value is far below 0.0005, which means rejection of the null hypothesis that the model without predictors is as good as the model with the predictors. This is the case for all four models. In addition, in fitting an ordinal regression, there is the assumption that the relationships between the independent variables and the logits are the same for all the logits, which means that the results are a set of parallel lines or planes—for each category of the outcome variable (Norušis 2006). The result of

the test of parallelism shows that the model is an adequate parallel model. This is explained by the large significance level (1.000), which results in failing to reject the null hypothesis that the slope coefficients are the same across response categories. The significance level tests the difference between the log-likelihood for the null hypothesis that assumes the lines are parallel, and the log-likelihood for the model with separate lines or planes. This is the case for three models, but not for the ATP model based on quality perception. This means that the relationships between the independent variables and the value of ATP based on quality perception (logits) are not the same for all logits. All four models appear to fit, since the significance levels of deviance goodness-of-fit of these models are large. The strength of association between the dependent variable and the predictor variables is provided by several pseudo  $R^2$ , i.e., Cox and Snell  $R^2$ , Nagelkerke  $R^2$ , and McFadden  $R^2$ . These models have medium  $R^2$ -like statistics, which range from 0.291 to 0.613.

The independent variables in these models consist of user characteristics for both the social demographic and financial aspects, and for the quality aspects of paratransit service. All models seem to explain a similar tendency. Males are less likely to assign higher WTPq, but they are more likely to assign higher WTPf. Younger people are less likely to assign higher WTP and ATP than older people. Single people are more likely to assign higher WTP and ATP for all situations. People with a university education are more likely to assign higher WTPq and ATPq than people with junior high school education. This explains that people with higher education express positive appreciation to quality aspects. On the contrary, people with less education are more likely to assign higher ATPf and WTPf. Users who are students are more likely to assign higher ATPq and ATPf than users who are entrepreneurs, but the students are less likely to express higher WTPq. It is easy to understand that users who have no car are less likely to assign higher WTP and ATP than people with a car.

The trip purpose of shopping is less likely to be assigned a higher valuation than studying or working. A longer trip (more than 10km) is less likely to be assigned a higher valuation. This is also the case for waiting time, so a longer waiting time is less likely to be assigned higher WTPq and ATPq. Easier accessibility is more likely to receive a higher valuation by the users. Similarly, people are less likely to assign a higher valuation for a less comfortable service. It is interesting to notice that whatever the condition of service and the household's financial situation, people are less likely to assign higher ATPf. This fact is understandable, as people tend to express a lower ability to pay. The models also show that people who perceive the price as too cheap are more likely to assign higher ATP and WTP for all conditions.

**Table 1. Ordinal Probit Models Based on Quality Perception**

Variables	WTP		ATP	
	$\beta$	Sig.	$\beta$	Sig.
<b>Threshold*</b>				
WTPq [less than 750 IDR]	-1.447	.005		
WTPq [750–1000 IDR]	-.099	.845		
WTPq [1000–1250 IDR]	1.054	.039		
WTPq [1250–1500 IDR]	3.247	.000		
ATPq [< 750 IDR]			-.633	.382
ATPq [750–1000 IDR]			.969	.183
ATPq [1000–1250 IDR]			2.285	.002
ATPq [1250–1500 IDR]			4.015	.000
<b>Location</b>				
Sex [male]	-.220	.112	.153	.291
Age [< 15 years old]	-.900	.033	-2.177	.000
Age [15–25 years old]	-.774	.001	-1.348	.000
Age [25–35 years old]			-1.194	.000
Status [single]	.529	.036	.643	.018
Education [junior high school]	1.178	.003	1.462	.000
Education [senior high school]	1.315	.001	1.506	.000
Education [university]	1.732	.000	1.894	.000
Job [entrepreneur]	-.395	.125	.822	.002
Job [student]	-.931	.003	.940	.001
Car ownership [car]	-.316	.071	.371	.044
Number of trip [twice per day]			.430	.003
Trip purpose [studying]	.420	.120		
Trip purpose [working]			.301	.176
Trip purpose [shopping]	-.446	.056		
Reason for using paratransit [no private car]	-.208	.187	-.420	.032
Reason for using paratransit [faster, more comfortable, or safer]	-.292	.106	-1.218	.000
Reason for using paratransit [cheaper]			-.350	.102
Trip distance [5–10 km]	.508	.000		
Waiting time [< 5 minutes]	-.599	.001	-.579	.003
Waiting time [5–10 minutes]	-.785	.000	-.590	.003
Accessibility [easy]			.868	.023
Accessibility [fair]	.272	.057	.733	.055
Comfort [comfortable]	-1.311	.000	-.836	.018
Comfort [fair]	-1.706	.000	-1.289	.000
Safety [safe]			-.442	.019
Service quality [very bad]			.685	.138
Service quality [bad]	.390	.135	.517	.185
Service quality [fair]	1.037	.000	1.103	.002
Monthly expenses [0.5–1 million IDR]			-.296	.055
Monthly transport expenses [< 100,000 IDR]			-.283	.074
Price [too cheap]	2.957	.000	3.920	.000
Price [fair]	.902	.000	1.474	.000
L (0) – L ( $\beta$ ); df; Sig.	231.493; 24; .000		298.278; 30; .000	
Pearson Goodness-of-fit ( $\chi^2$ ; df; Sig.)	926.922; 752; .000		1043.931; 766; .000	
Deviance Goodness-of-fit ( $\chi^2$ ; df; Sig.)	719.493; 752; .798		688.247; 766; .979	
R <sup>2</sup> (Cox and Snell; Nagelkerke; McFadden)	.489; .519; .236		.579; .613; .299	
Test of Parallel Lines ( $\chi^2$ ; df; Sig.)	28.687; 72; 1.000		352.980; 90; .000	

**Table 2. Ordinal Probit Models Based on Financial Condition Perception**

Variables	WTP		ATP	
	$\beta$	Sig.	$\beta$	Sig.
<b>Threshold*</b>				
WTPf [< 750 IDR]	-3.182	.000		
WTPf [750–1000 IDR]	-1.619	.000		
WTPf [1000–1250 IDR]	-.364	.378		
WTPf [1250–1500 IDR]	1.960	.000		
ATPf [< 750 IDR]			-3.000	.000
ATPf [750–1000 IDR]			-1.844	.002
ATPf [1000–1250 IDR]			-.362	.536
ATPf [1250–1500 IDR]			1.551	.008
<b>Location</b>				
Sex [male]	.340	.013		
Age [< 15 years old]	-1.320	.000	-2.273	.000
Age [15–25 years old]	-.840	.000	-1.537	.000
Age [25–35 years old]			-.906	.004
Age [35–50 years old]	.635	.047		
Status [single]	.957	.000	.785	.003
EDU [junior high school]			1.457	.000
EDU [senior high school]			1.119	.006
EDU [university]	.314	.020	1.150	.005
Job [entrepreneur]			.600	.023
Job [student]			.921	.001
Car ownership [does not own a car]	-.686	.000	-.586	.000
Car ownership [motor cycle]	-.381	.034		
Car ownership [car]			.420	.025
Trip purpose [shopping]			-.490	.011
Reason for using paratransit [faster, more comfortable, or safer]	-.507	.003	-.501	.004
Trip distance [< 5km]	.419	.035		
Trip distance [5–10km]	.503	.001		
Trip distance [10–20km]			-.358	.022
Waiting time [< 5 minutes]	-1.069	.000	-.485	.000
Waiting time [5–10 minutes]	-.903	.000		
Accessibility [fair]	.241	.088		
Comfort [comfortable]	-.679	.027	-.486	.125
Comfort [fair]	-1.051	.000	-.765	.009
Service quality [bad]			-.494	.060
Service quality [fair]			-.450	.052
Monthly expenses [< 0.5 million IDR]			-.356	.158
Monthly expenses [0.5 million IDR]			-.458	.067
Monthly transport expenses [< 100,000 IDR]	-.471	.001	-.445	.004
Price [too cheap]	3.689	.000	3.735	.000
Price [fair]	1.541	.000	1.408	.000
L (0) – L ( $\beta$ ); df; Sig.	291.288; 19; .000		278.017; 24; .000	
Pearson Goodness-of-fit ( $\chi^2$ ; df; Sig.)	5502.889; 761; .000		1540.854; 728; .000	
Deviance Goodness-of-fit ( $\chi^2$ ; df; Sig.)	658.353; 761; .997		634.302; 728; .995	
R <sup>2</sup> (Cox and Snell; Nagelkerke; McFadden)	.570; .608; .303		.553; .590; .291	
Test of Parallel Lines ( $\chi^2$ ; df; Sig.)	29.154; 57; .999		9.583; 72; 1.000	

\*Note: WTPq = WTP based on quality perception; ATPq = ATP based on quality perception, WTPf = WTP based on financial perception; ATPf = ATP based on financial perception;

### ***Binomial Regression Model***

Table 3 shows two binomial regression models that estimate two things: the agreement for fare increment (first model) and the agreement to increase the fare as much as 500 IDR or more (second model). Further explanation regarding binomial regression model is available in Hair et al. (1998, 2006). The omnibus tests of model coefficients have a very low significance level ( $< 0.05$ ), which means the model is significantly different from the one with the constant only. Hosmer and Lemeshow's goodness-of-fit test of these models is far greater than 0.05. This test statistic means that it is a well-fitting model and fails to reject the null hypothesis that there is no difference between observed and model-predicted values, implying that the model's estimates fit the data at an acceptable level (Garson 2006). The models have  $-2LL$  as high as 258.298 and 261.912 for the first and second model, respectively. The Cox & Snell  $R^2$  and Nagelkerke  $R^2$  of these models range from 0.284 to 0.431 (see Newsom 2004 for more discussion about  $R^2$  in logistic regression). These models have overall percentages as high 82.9 percent and 72.8 percent for the first and second models, respectively. The values have a meaning that the models are capable of explaining and predicting.

In these agreement models—fare increment and amount of fare increment— younger people seem to have a higher agreement with a fare increment than older people. People with junior high school education are more likely to agree with a fare increment than people with university education, although people with less education are less likely to agree with a higher fare increment. Student users are less likely to agree with a fare increment. People with a motorcycle in their household are more likely to agree with a higher fare increment than people with or without an automobile. This model explains that people with any trip purpose do not seem to agree with a higher fare increment.

People with one trip per day are more likely to agree with a fare increment, and a higher amount. Users who perceive paratransit as cheaper than other modes of transport are more likely to agree with fare adjustment. It is understandable that people who take short trips are less likely to agree with higher fares. People who perceive the existing service as comfortable and safe are more likely to agree with a higher fare increment. Similarly, a less accessible service is less likely to receive a higher fare adjustment.

People with monthly transportation expenses less than 100,000 IDR are not likely to agree with a fare increment, but they express agreement with a higher amount. Similarly, people who perceive the current price as fair are not likely to agree with a

**Table 3. Binomial Regression Models Regarding Fare Increment**

Variables	Agreement for Fare Increment		Agreement to Increase 500 IDR or more	
	$\beta$	Sig.	$\beta$	Sig.
Constant	.228	.849	-7.375	.000
Age (1 if 15 years old or less, 0 otherwise)	4.125	.000	1.283	.087
Age (1 if 15–25 years old, 0 otherwise)	2.115	.000		
Age (1 if 35–50 years old, 0 otherwise)	-1.531	.027		
Education (1 if junior high school or less, 0 otherwise)	3.139	.006	-1.085	.103
Education (1 if senior high school, 0 otherwise)	2.823	.008	-.906	.010
Education (1 if university, 0 otherwise)	2.672	.012		
Job (1 if student, 0 otherwise)	-3.011	.000		
Car ownership (1 if no car, 0 otherwise)			1.885	.017
Car ownership (1 if motorcycle, 0 otherwise)			2.112	.007
Car ownership (1 if car, 0 otherwise)			1.676	.033
Number of trips (1 if once, 0 otherwise)	1.487	.010	1.185	.013
Trip purpose (1 if studying, 0 otherwise)			-1.355	.079
Trip purpose (1 if working, 0 otherwise)	-2.450	.000	-2.243	.006
Trip purpose (1 if shopping, 0 otherwise)			-1.575	.070
Reason for using paratransit (1 if faster, more comfortable, and safer, 0 otherwise)			1.523	.002
Reason for using paratransit (1 if cheaper, 0 otherwise)	2.903	.000		
Trip distance (1 if 5km or less, 0 otherwise)			-.837	.074
Trip distance (1 if 5–10km, 0 otherwise)	-.596	.091		
Accessibility (1 if fair, 0 otherwise)			-1.044	.003
Comfort (1 if comfortable, 0 otherwise)	.982	.044	5.649	.000
Comfort (1 if fair, 0 otherwise)			3.914	.000
Safety (1 if safe, 0 otherwise)			.844	.091
Quality (1 if very bad, 0 otherwise)	1.712	.080	2.558	.013
Monthly transport expenses (1 if less than 100,000 IDR, 0 otherwise)	-.910	.013	.846	.030
Price perception (1 if fair, 0 otherwise)	-1.390	.000	.625	.064
ATPq (1–5)*	1.027	.000	.617	.001
WTPf (1–5)*	.568	.036		
ATPpf (1–5)*	-1.400	.000		
Omnibus tests of model coefficients ( $\chi^2$ , df, sig.)	115.367; 18; .000		103.094; 20; .000	
Hosmer & Lemeshow test ( $\chi^2$ , df, sig.)	12.655; 8; .124		9.781; 8; .281	
-2LL	258.298		261.912	
Cox & Snell R <sup>2</sup>	.284		.322	
Nagelkerke R <sup>2</sup>	.430		.431	
Percent Correct	82.9		72.8	

\*Note: 1 = less than 750 IDR, 2 = 750 – 1000 IDR, 3 = 1000 – 1250 IDR, 4 = 1250 – 1500 IDR, and 5 = more than 1500 IDR.

fare increment, but they express agreement with a higher amount. This contradictory situation expresses different perceptions of financial capability, where people actually have the ability to pay, but tend to express a lower willingness to pay. In addition, the models explain that the ATP based on quality perception is more important than other valuations in deciding the agreement.

## Discussion

### *Findings*

This study explores users' willingness and ability to pay when making use of paratransit. The findings illustrate the interesting result that there is a gap between the value of willingness and ability to pay, and people make valuations differently regarding their related perception.

Moreover, this study goes into deeper analysis to reveal the characteristics of paratransit users. The analysis using ordinal probit regression explains which group of users has a tendency to assign a higher value (WTP or ATP). The different characteristics of the users also influence their decision to accept the fare increment and to determine the acceptable amount of the increment. This decision has been explored by incorporating the values of willingness and ability for both perceptions.

The binomial regression models reveal which group of users and which valuation are important in determining the agreement. All models explain the fact that the valuation and decision depends on users' perceptions regarding the service quality, the characteristics of trips, and their financial capability. These findings are in line with the statement that people value the characteristics of goods, not the good themselves (Lancaster 1966b, Walton et al. 2004). Moreover, Russell (1996) has argued that being willing and able to pay for a commodity does not automatically imply being able to afford it, mainly because the social opportunity cost of the payment may be too high to be socially acceptable.

The interpretations of this study can also refer to the term "money illusion" (Shafir et al. 1997), defined as the tendency to think in terms of nominal rather than real monetary values (Shafir et al. 1997, Mataria et al. 2006). Shafir et al. (1997) argued that people often think about economic transactions in both *nominal* and *real* terms, and that money illusion arises from an interaction between these representations, which results in a bias towards a nominal evaluation. These considerations have for long been features distinguishing economists' versus psychologists'

approaches and methods of reasoning about the elicitation of people's preferences (Fischhoff and Manski 2000, Mataria et al. 2006).

### ***Policy Implications***

Public transportation fare determination covers a variety of factors, ranging from the cost of providing the service to urban transport policy, which are expressed in the fare level, fare structure, and method of fare collection. Vuchic (2005) states three basic objectives for a fare system: 1) to attract the maximum number of passengers, 2) to generate the maximum revenue for the transit agency, and 3) to achieve specific goals (e.g., increasing the mobility of the labor force, students, or seniors, etc.). Thus, planning transit fares requires analysis of many trade-offs among objectives and the satisfaction of requirements and constraints, which are usually subjects of political decisions (Vuchic 2005).

In fact, the current practice of fare determination results in much controversy from operators and users, for example in Indonesia. The main problem focuses on the different perceptions regarding the "suitable fare" for all stakeholders. Thus, this study suggests an incorporation of W/ATP analysis into fare evaluation and determination, since this study reveals the existence of range of fare acceptance by the user, which is shown by the value of ATP and WTP determined by the user, for some basis of determination. Moreover, this study reveals the characteristics of the user who values higher ability/willingness to pay.

As a matter of fact, the fare determination of paratransit in Indonesia is not determined solely by the government. The fare determination involves several other stakeholders, e.g., parliament, operator organizations, etc. The analysis can be exploited as a tool to evaluate the existing or proposed fare, where the W/ATP acts as a benchmark to calculate the number of current or potential users who will deem the fare too cheap, acceptable, or too expensive. Thus, this study provides information to these stakeholders regarding the number of community or groups of community who are influenced by the proposed fare. Although knowing whose WTP is higher does not help directly to produce more profit for the operator, the knowledge will provide better understanding regarding the effect of fare determination. Thus, the policy implications of W/ATP implementation in fare planning will depend upon the objectives for the fare system. This means that W/ATP analysis will show the number of affected people, including their characteristics, when the fare is changed. However, the final decision should be made by considering the objective. This implies that the government should shoulder the risk of compen-

sating the group within the community that experiences financial shortcomings as a result of the fare change.

In the case of paratransit in Indonesia, on the one hand, the current objective of the fare system aims primarily to cover the cost of service provision, since paratransit is primarily provided by private individuals. On the other hand, there is a gap between the values of ability and willingness to pay. This means that it is hard to provide a straightforward suggestion, such as increasing or decreasing the fare, since it is not clear who will shoulder the impact of the fare adjustment based on W/ATP analysis. Thus, the fare system needs a clear statement of objectives, while W/ATP analysis will improve the strength of analysis of the affected community.

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