ATP and WTP analysis in determining retribution rate for building construction permit in Boyolali district

Yantini, Sri Sunarjono, Mochamad Solikin, Nurul Hidayati
Teknik Sipil, Universitas Muhammadiyah Surakarta - Indonesia
E-mail: hr.yantini.hy@gmail.com

Abstract. Building Construction Permit (BCP) is a permit granted by the regional government except for buildings with particular government functions to build new, change, expand, reduce, and maintain buildings according to applicable administrative and technical requirements. This study aims to analyze and determine the unit price building levies for building permits in Boyolali Regency. The study aims also can fulfill the concept of cost recovery and equity. The amount of retribution paid by the community is equal to the operational costs in the licensing process or services provided by the local government and adjusted to the public ability to pay and willingness to pay or benefits provided by the local government. This research is a descriptive-analytical study. The sample in this study was 100 respondents. This research's data sources consist of primary data in interviews and questionnaires and secondary data in operational costs and targets and realization of BCP income. The results showed that the BCP levy rate set's value was lower than the value of the Activity Operational Costs (OAC). However, the value of the OAC tariff is greater than the value of ATP and WTP. The ability to pay BCP levies is equivalent to the willingness to pay BCP levies.

1. Introduction
Building Construction Permit (BCP) is a permit granted by the regional government except for buildings with special functions by the Government to building owners to build new, modify, expand, reduce, and maintain buildings following applicable administrative and technical requirements [1] [2]. Suppose the issuance of a building construction permit levies a levy for part of or equal to the cost of operational process activities. In that case, the amount must be following the calculation based on the level of use of licensing services and the level of community capacity [3].

Each Regency / City government is required to determine the Unit Price (Tariff) for Building Levies (HSbg) and the unit price for building infrastructure levies (HSpbg) that are appropriate for each region. Based on this unit price, the IMB is calculated by multiplying the building area with the building unit price per square meter (m2). The IMB is calculated based on the building price according to the Regent’s analysis calculation [4].

The determination of the unit price (tariff) is essential to cover part or all of the costs of administering the license issuance. Costs of administering the issuance of a permit here include the distribution of permit documents, field supervision, law enforcement, administration, and the costs of the negative
impact of the license issuance [5] [6]. The BCP retribution results are not only to finance development but also to provide BCP to regulate/control and organize community buildings so that they are orderly and neat following building standards that are livable and safe for residents [7].

Based on that case, researchers are interested in conducting research that intends to analyze and determine the unit price (tariff) for building levies for building permits in Boyolali, fulfilling the concept of cost recovery and equity. So, the amount of retribution paid by the community is balanced with the operational costs in the licensing process or services provided by the local government and is adjusted to pay and willingness to pay the community to support investment development in Boyolali Regency in general.

Several studies examine the ability to pay and willingness to pay. The first research from Mabud & Marsaoly analyzes aircraft fare determination using ATP and WTP. The objective of the tariff setting is to ensure the continuity of the operation of transportation with service quality according to safety standards, taking into account the purchasing power of the public and its effect on production prices [8]. The second study from Zohra et al., which analyzes the ability and willingness to pay the public for the tariff of public transport services, shows that the ATP value exceeds 60% and the WTP value exceeds 80% [9]. From these results, the respondents’ average ATP value is smaller than the WTP value.

Furthermore, Safitri’s research shows the ability to pay for public transportation is greater than the willingness to pay. Even though the applicable tariff is higher than the government’s official tariff, it does not affect the public’s interest in using public transportation [10]. So, it can be said that tariffs are not the main problem that causes low public interest.

2. Methods
This research is a quantitative study. The population in this study were people who submitted BCP in January 2019. The number who submitted BCP was 140 respondents, while the sample used in this study was 100 respondents obtained using the Kracjie table with an error rate of 10% [11].

Data collection was carried out using a questionnaire via a google form. The data obtained is used in analyzing the unit price (Retribution) of buildings in the BCP, then processed using ATP and WTP analysis. The ATP value analysis is obtained from the ratio of the allocation of payer costs for the payment of the BCP to the total value of the building, both those with income or not. WTP analysis is obtained from the respondent’s perception of the respondent’s tariff on the tariff scenario used in the questionnaire sheet [12].

3. Results and Discussion
This study used a sample of 100 respondents. Not all respondents have the same perceptions and views of the BCP levy rates charged in the BCP licensing process. Respondents considered that the BCP levy tariff in Boyolali Regency was included in a reasonably large cost group compared to costs in several districts around Boyolali Regency.

Determining a sample of 100 respondents was carried out based on differences of opinion regarding the BCP tariff determination. The contrast of view is then examined the respondents’ responses to the tariff using the analysis of the willingness and ability to pay the BCP levy tax.

3.1. Activity Operating Cost
The BCP levy unit tariff set by the Boyolali Regency Government is currently Rp. 15,000,-. Based on the calculation of Activity Operational Costs (OAC), it is known that the BCP rate is Rp. 17.031, the value of the determined BCP levy rate is lower than the value calculated by the OAC. The OAC result determination was not immediately decided as the value of the BCP levy rate. The decision to determine the BCP tariff value of Rp. 15,000, - is a form of tariff
compensation so that the BCP rate value is not Rp. 17,031,-. This is done so that the BCP tariff does not become a burden for residents in the Boyolali Regency area.

Tariff setting with a lower policy than the operational costs of activities shows the government’s concern for helping the welfare of the community. The calculation results in a rational tariff that is higher than the current service rate. To overcome the conditions demand of service fees, low financing mobilization is implemented and adjusted to priorities oriented towards benefits and efficiency. However, it is necessary to consider the administration system’s suitability and policy and the financing system with unit cost analysis and the ability to pay [13]. This administrative system policy is used to fulfill the OAC rate calculation in determining the BCP rate. The administrative system in question is the existence of operational funding support taken from the Boyolali district budget.

3.2. Willingness and ability of the community in paying IMB levy rates

In the results of the ATP analysis, it is known that the factors that influence the ability to pay the BCP levy are expenditures. The logistic regression test results obtained the following equation.

Exp Coefficient Value (B)

\[
ATP = 0.023 + 0.983 \text{Sex} + 1.181 \text{Education} + 0.727 \text{Occupation} + 0.191 \text{Marriage} + 1.055 \text{Age} + 1.409 \text{Family Member} + 0.826 \text{Building Price} + 0.800 \text{Land Price} + 1.005 \text{Building Size} + 1.523 \text{Area Surrounding} + 0.626 \text{Income} + 2.177 \text{Expenditure}
\]

Wald Value

\[
ATP = 1.642 + 0.000 \text{Sex} + 0.200 \text{Education} + 0.281 \text{Occupation} + 2.068 \text{Marriage} + 1.746 \text{Age} + 1.199 \text{Member Family} + 0.356 \text{Building Price} + 0.215 \text{Land Price} + 1.783 \text{Building Size} + 0.836 \text{Area Surrounding} + 1.227 \text{Income} + 3.744 \text{Expenses}
\]

Sig. Value

\[
ATP = 0.200 + 0.983 \text{Sex} + 0.655 \text{Education} + 0.596 \text{Occupation} + 0.150 \text{Marriage} + 0.186 \text{Age} + 0.273 \text{Family Member} + 0.551 \text{Building Price} + 0.643 \text{Land Price} + 0.182 \text{Building Size} + 0.361 \text{Area Around} + 0.268 \text{Income} + 0.053 \text{Expenditure}
\]

In the above ATP analysis, 12 independent variables analyzed its effect on ATP. The results of the study show that the greatest and most significant impact is expenditure. This is indicated by the Exp (B) value of 2.177, the wald value of 3.744, and a substantial value of 0.53.

The ability to pay BCP rates in this study shows that the expenditure factor has the greatest and most significant ATP effect. The influence is because the BCP tariff payment itself is part of the costs to be incurred by the community. At the time of payment of the BCP levy rate, it will also be directly associated with the ability. The higher the expenditure, the higher the ability to make payments. An increase in the ability to pay retribution occurs when some costs have been incurred. It turns out that they can pay the BCP tariff levy.

The ability to pay varies because the needs of each household are different. The condition of necessities is so excellent that this household cannot set aside some of its money for non-food essentials such as levies and taxes [14]. The results of the logistic regression test for WTP analysis obtained the following equation:

Exp Value (B)

\[
ATP = 0.006 + 0.960 \text{Sex} + 1.755 \text{Education} + 0.241 \text{Occupation} + 0.709 \text{Marriage} + 1.031 \text{Age} + 0.845 \text{Family members} + 0.856 \text{Building Price} + 2.504 \text{Land Price} + 1.004 \text{Building Size} + 1.632 \text{Area Around} + 0.919 \text{Income} + 1.766
\]

Wald Value

\[
ATP = 2.808 + 0.003 \text{Sex} + 2.418 \text{Education} + 6.259 \text{Occupation} + 0.108 \text{Marriage} + 0.760 \text{Age} + 0.353 \text{Family members} + 0.275 \text{Building Price} + 4.056 \text{Land Price} + 1.536 \text{Building Size} + 2.066 \text{Area Surrounding} + 0.052 \text{Income} + 2.523 \text{Expenditure}
\]

Sig. Value
ATP = 0.094 + 0.955 Sex + 0.120 Education + 0.012 Occupation + 0.743 Marriage + 0.383 Age + 0.553 Family Member + 0.600 Building Price + 0.044 Land Price + 0.215 Building Size + 0.151 Area Surrounding + 0.820 Income + 0.112 Expenditure

In the WTP analysis above, 12 independent variables are analyzed for their effects on WTP. The results of the study show that the biggest and most significant impacts are employment and land prices.

According to research results from Hasiani et al., factors that influence willingness to pay include income, knowledge, and age [15].

3.3. Amount of BCP Retribution Tariffs Based on ATP and WTP Analysis

Based on the results of the study, it is known that the tariff rate from the OAC results is 17,031, -. The proceeds from ATP and WTP are Rp. 7000, -. These results show that the value of the OAC tariff is greater than the value of ATP and WTP. This finding is in line with Jalil et al., which states that the OAC tariff value is above the ATP and WTP rates [12]. This illustrates that people who pay BCP levies are a group of choice riders who have relatively high incomes but can pay below the agency’s operational costs with a low BCP utility rate [16].

| ATP (Ability To Pay) | Amount | Percentage |
|----------------------|--------|------------|
| Rp. 7,000,-          | 57     | 57%        |
| Rp. 10,000,-         | 29     | 29%        |
| Rp. 15,000,-         | 14     | 14%        |
| Rp. 17,000,-         | 0      | 0%         |
| Rp. 20,000,-         | 0      | 0%         |
| **∑**                | 100    | **100%**   |

From these results, the ability to pay (ATP) of the BCP levy payer is Rp. 7,000 with Rp’s valid rate. 15,000 indicates that the current capacity to pay the community’s BCP levy is smaller than the current tariff. This finding is different from Firdausi et al., which states that the ability to pay (ATP) of Bratang- Bungurash Bus users is greater than the current tariff [17]. Furthermore, ATP based on the respondent’s income and expenses can be explained as follows.

From the findings above, the respondents who are the ablest to pay the BCP retribution rate are those who have high income above Rp. 5,000,000, -. This is as stated by Rosyidah et al. in their research that the high ability to pay is due to the respondents’ relatively high income [18].

Willingness to pay is the highest price a person (consumer) is willing to pay to get a benefit in the form of a good or service, as well as a measure of how much a potential consumer appreciates the product or service [19] [20] [21]. Here the researcher finds someone’s willingness to pay (WTP) by offering the respondent a certain amount of money, whether the respondent is willing to pay or not to take part in delivering the BCP levy.

Based on the table above, the community’s willingness to pay levies based on income and expenditure varies. The number of people who are most chosen and willing to pay (WTP) is Rp’s tariff. 7000.

Based on the evaluation results of BCP levy rates in Boyolali Regency, it can be concluded that the ability to pay BCP levies is the same as the desire to pay BCP levies (ATP = WTP). This condition shows that the ability and willingness to pay the levy are in a balance between the user’s utility and the costs incurred to pay for the service [8].

The findings above contradict the results of research from Winaya & Caroline. The value of WTP is greater than the value of ATP, so it can be said that the respondent has a high income,
Table 2: Ability to Pay Based on Income and Expenditures

| Income Level   | The midpoint | Frequency | Amount   | Percentage |
|----------------|--------------|-----------|----------|------------|
| Rp. 500,000 - Rp. 1,000,000 | 750,000 | 5 | 3,750,000 | 5%          |
| Rp. 1,000,001 - Rp. 2,000,000 | 1,500,000 | 13 | 19,500,000 | 13%         |
| Rp. 2,000,001 - Rp. 3,000,000 | 2,500,000 | 19 | 47,500,000 | 19%         |
| Rp. 3,000,001 - Rp. 4,000,000 | 3,500,000 | 24 | 84,000,000 | 24%         |
| Rp. 4,000,001 - Rp. 5,000,000 | 4,500,000 | 10 | 45,000,000 | 10%         |
| >Rp. 5,000,000    | 6,000,000 | 29 | 174,000,000 | 29%        |
| Total            | 373,750,000 | 100 | 100%     |

Average monthly income = 3,737,500

| Expenditure Rate | The midpoint | Frequency | Amount   | Percentage |
|------------------|--------------|-----------|----------|------------|
| Rp. 500,000 - Rp. 1,000,000 | 750,000 | 11 | 8,250,000 | 11%         |
| Rp. 1,000,001 - Rp. 2,000,000 | 1,500,000 | 15 | 22,500,000 | 15%         |
| Rp. 2,000,001 - Rp. 3,000,000 | 2,500,000 | 23 | 57,500,000 | 23%         |
| Rp. 3,000,001 - Rp. 4,000,000 | 3,500,000 | 27 | 94,500,000 | 27%         |
| Rp. 4,000,001 - Rp. 5,000,000 | 4,500,000 | 10 | 45,000,000 | 10%         |
| >Rp. 5,000,000   | 6,000,000 | 14 | 84,000,000 | 14%         |
| Total            | 311,750,000 | 100 | 100%     |

Average Expenditure per month = 3,117,500

but the utility of the Surabaya-Porong commuter train service is shallow [22]. Meanwhile, the research results from Armijaya & Annisa show that the ability to pay (ATP) is greater than the willingness to pay (WTP) [23]. This indicates that people are in a free choice condition (choice riders), where the user’s income is relatively high, but the utility for these services is relatively low [24]. The ATP is more significant than this WTP, according to Hasbullah et al. occurs in people who have relatively high incomes but have not yet felt the utility of services [25].

4. Conclusion

BCP levy tariff is determined based on the operational costs of the activity, and using full approach costing, it is known that it is Rp. 17,031,-. Implementation in the field, the BCP levy tariff price set by the Boyolali Regency Government is Rp. 15,000,-. As a result of these results, the applied levy rates are lower than the calculation results based on OAC with the full costing approach.

The amount of the BCP payment levy tariff is based on the results of the WTP analysis, the value of the levy set by Boyolali is Rp. 15,000,-, but the results of the community’s Willingness
Table 3: WTP Based on Income and Expenditure

| Income per Month   | Value of Willingness to Pay BCP Retribution (WTP) | Total |
|--------------------|--------------------------------------------------|-------|
|                    | 7,000.00 | 10,000.00 | 15,000.00 |       |
| Rp. 500,000 - Rp. 1,000,000 | 2        | 1         | 2         | 5     |
| Rp. 1,000,001 - Rp. 2,000,000 | 11       | 1         | 1         | 13    |
| Rp. 2,000,001 - Rp. 3,000,000 | 14       | 4         | 1         | 19    |
| Rp. 3,000,001 - Rp. 4,000,000 | 18       | 2         | 4         | 24    |
| Rp. 4,000,001 - Rp. 5,000,000 | 4        | 4         | 2         | 10    |
| >Rp. 5,000,000a | 10       | 10        | 9         | 29    |
| Total              | 59       | 22        | 19        | 100   |

| Expenses per Month | Value of Willingness to Pay BCP Retribution (WTP) | Total |
|--------------------|--------------------------------------------------|-------|
|                    | 7,000.00 | 10,000.00 | 15,000.00 |       |
| Rp. 500,000 - Rp. 1,000,000 | 7        | 2         | 2         | 11    |
| Rp. 1,000,001 - Rp. 2,000,000 | 11       | 3         | 1         | 15    |
| Rp. 2,000,001 - Rp. 3,000,000 | 19       | 1         | 3         | 23    |
|Rp. 3,000,001 - Rp. 4,000,000 | 12       | 10        | 5         | 27    |
| Rp. 4,000,001 - Rp. 5,000,000 | 5        | 3         | 2         | 10    |
| >Rp. 5,000,000a | 5        | 3         | 6         | 14    |
| Total              | 59       | 22        | 19        | 100   |

To Pay (WTP), the amount of the rate that is willing to pay is Rp. 7,000,-. The public expectation rate regarding the ability to pay BCP retribution based on the ATP analysis is also Rp. 7,000,-.

The amount of tariff as desired by the community is statistically influenced by expenditure, employment, and land prices. The request for levy rates from the analysis of WTP and ATP is in line with the ATP calculation based on the fulfillment of living standards, clothing, food, shelter, and health.

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