

Comparison of Affordability Indices and Urban Bus Subsidies in Medium-sized City (Case Study: Jogjakarta and Palembang)

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Subsidy policies on urban public transport have been adopted ubiquitously in both developed and developing countries. Generally, subsidies are implemented to make transport more affordable. To measure and to understand the transport expenditure of households are critically important for evaluating transport policies, as well as for investigating their effectiveness. This research describes the role of urban public transport and incidence of bus subsidies in medium-sized cities such as Jogjakarta and Palembang, Indonesia, where new transit systems were launched to replace the existing bus services being abandoned by city dwellers. The results indicate that while the poorest households constitute one-fourth of total households in the sample of Jogjakarta and Palembang, they receive only 5 and 6 percent of transit subsidies, respectively. The wealthiest households, who constitute 8 and 7 percent in the sample of Jogjakarta and Palembang, receive transit subsidy that are more than three time and more than two times larger than their equal share, respectively, under the uniform distribution of the subsidy across income groups. The middle income group, earning Rp 1,000,000-Rp 2,500,000 per month receives subsidy benefits in roughly equal proportion to their share in the population of both cities. The high income group, earning Rp 2,500,000-Rp 5,000,000 per month receives about one-third subsidy benefits in both cities, respectively. Average affordability indices and bottom quintile affordability indices of Jogjakarta and Palembang is 17% and 20%, and 25% and 27%, respectively, indicating the expenditure on public transport is too expensive.

Key Words: *trans bus, medium-sized cities, transit subsidy, affordability indices*

1. INTRODUCTION

Most of the research conducted in the state capital and major cities, otherwise very rarely include medium-sized city even these were also constantly evolving towards large cities and urban transport issues facing complicated. Some of them are: very high use of private vehicles, especially motorcycles, the high number of accidents, and illegal vehicle use.

Medium-sized city -in Indonesia is categorized as

population between 500,000 to 1 million in habitants- such as Jogjakarta and Palembang has experienced rapid economic and transport growth in the past decade. Car ownership continues to grow despite the economic crisis of 1998. A major ADB study completed in 2011 predicts the result of ongoing urbanization and population growth of Jogjakarta within the city's limited geographical area is driving the urban footprint expansion beyond the city's boundaries. From a transport perspective, this

situation highlights the classic hallmarks of increased number and distance commuter trips, and the inevitable congestion of urban arterials within the city.

The same study in Palembang, capital of south Sumatera province, concludes the rapidly increasing population will require more careful consideration of the pattern of future land use and integrated of urban transportation system. However, because of uncertainty of land use planning in most of cities in developing country, a process-driven is recommended not plan-driven, in which to develop an advance urban public transport. Growth number of parking spaces and motorcycles has effect on the deteriorating environmental condition in several places including city center. Causative factors above have tended to increase the number of vehicles that will obstruct the concept of sustainable urban public transport.

Recently, more than half of the thirty-three provincial capitals are classified as medium-sized city and the number tends to increase as economic growth and also population growth. Economic activities are reshaping the small cities and new businesses that strongly influence life in the city are emerging. The constantly occurring socio-spatial restructuring drives behavioral changes in daily life. One example is the construction of new system of transport and the expansion of the cities, so called urban sprawl. Taken together, a city's structure and social activities define the basic demand for urban public transport. However, at the same time, travel distances are increasing in large urban areas and the low income people spent more money and time on urban public transport than middle and high income group, in order to arrive at their workplace.

Transport mix is one of the important characteristics of Indonesian cities, under the given size, structural and socio-economic characteristic. The uniqueness of road networks, demographic, physical and societal requirements determine the selection of a particular transport system. Recently, most of medium-sized cities characterized by a system with strong emphasis on private vehicle and para-transit system and little by way of mass public transportation. These cities are however often not capable of performing such evaluations due to a lack of institutional capacity, knowledge and funding.

In the context of medium-sized city, it is crucial to evaluate both affordability indices and the distributive impacts of subsidies in order to evaluate whether they are effectively meeting their social and distributive objective.

This research describes some of measures regarding comparison of affordability indices and ur-

ban bus subsidies in medium-sized city, Indonesia. Two cities are selected representing Jogjakarta as the first implemented Trans system, and Palembang represents the most rapid growth of urban transit after Transjakarta bus way. The focus is specifically on distribution of urban bus subsidies where each city adopts a different approach to competition for urban bus system. Bus fares in both Jogjakarta and Palembang are subsidized since the beginning of operation: TransJogja which operates urban transit in Jogjakarta subsidized bus fares from province budget through the approval of local parliament. TransMusi as an operator of urban transit of Palembang operated by PT SP2L which is municipal owned company and subsidized bus fares from city budget through the approval of local parliament. As the number of passengers carried is not always the same, the amount of annual subsidy is also not the same.

Methodologically, this analysis adopts a quantitative approach that complements with qualitative studies of household's total transportation expenditure and Trans expenditure by income group. The analysis is based largely on data from a survey of households in both Jogjakarta and Palembang that were conducted in the end of 2012. Thus, the data is reflecting the socioeconomic circumstances of Jogjakarta and Palembang over four and two year's operation of urban transit, respectively.

Most studies on poverty and transport estimate the percentage of monthly income or expenditure devoted to transport by poor families and compare this figure to a benchmark considered affordable to households.

The concept of affordability used here is based on the ability to undertake transport movements without significantly constraining the ability to undertake other activities of importance. Given that subsidies are usually justified based on the premise that they increase affordability of low income segments of the population, it is convenient to define the concept of affordability and how it can be used in practice. Armstrong-Wright and Thiese (1987) consider that there is an affordability problem with public transport when more than 10% of households spend more than 15% of their income on work related trips.

Although intuitively appealing, there are several problems with this affordability measure. The main one, as noted by Venter and Behrens (2005), is that relation between welfare and expenditure on transport as a percentage of income may not be monotonic. Therefore, it is not clear that households that spend less than 10% of income or expenditure on transport are necessary better off than people that spend more. As an example, it may be that due to the

high price of public transport very poor people either walk or do not make many trips. Thus, their observed transport expenditure may be low but this is the result of a suppression of trips rather than a high level of income.

In order to overcome the problem Carruthers, Dick and Saurkar (2005) use a fixed basket of trips to estimate the affordability indices. They define affordability as the ability to make necessary journeys to work, school, health and other social services, and make visits to other family members or urgent other journeys without having to curtail other essential activities. Operationally, they use the percentage of monthly per capita income or per capita income of the lowest quintile of the income distribution in a city needed to make sixty 10 km trips per month. Formally, Carruthers, et al affordability indices is define as,

$$Aff_1 = \frac{\sum_{i=1}^N \bar{x}_i P}{y} \quad (1a)$$

where x_i is the number of trips –usually public transport trips or work related trips– taken during the month by household member i , and y is household income or expenditure. N and p is number of family members and fares, respectively.

One of the advantages of using the methodology proposed by Carruthers, Dick and Saurkar (2005) is that it makes it easier to estimate comparable affordability indices across cities and countries. Their main results are twenty seven cities around the world, where the percentage of per capita income required to pay for sixty trips per month is presented for the average household and for households in the first quintile of the income distribution.

Although some notable efforts have been undertaken to measure affordability in the transport sector –especially Carruthers, Dick and Saurkar (2005)– it is still not clear what welfare interpretation can be given to these measures nor how can use them to evaluate policy interventions. In spite of this it may still be a useful first approximation to determine the hardships faced by certain groups of population and as possible indicator of when further analysis may be warranted or not.

Since affordability indices presented here needs to be consistent among many cities, authors used a similar measure of comparison based on data's of mean monthly expenditure on transport by income group of both cities Jogjakarta and Palembang. As there are five levels of income distributions developed, the lowest income category and the middle

represent the bottom quintile and the average, respectively.

There are two possible applications for the affordability indices developed by Carruthers, Dick and Saurkar. First, as an indicator to determine whether urban public transport is too expensive in a given city and therefore that something's should be done about it. A second possible use of the affordability indices is to evaluate the results of certain policy interventions like fare subsidy in both cities.

Because the bus subsidies is a percent of fares, the share of each subsidy going to income group i equal the share of income group i 's expenditure on bus in total expenditure on bus and is thus independent of the percent of fare that is subsidized. Formally,

$$S_{ij} = \frac{x_{ij} \cdot n_i}{\sum_i x_{ij} \cdot n_i} \quad (1b)$$

where S_{ij} is the share of total subsidy accruing to income group i from travel mode j , x_{ij} is the average monthly expenditure by a household belonging to income group i for travel mode j and n_i = fraction of households in income group i .

Indeed, it seems that the appealing benefit of bus rapid transit inspired the Ministry of Transport of Indonesia and municipalities to implement the new transit system in some medium-sized cities in last ten years in an attempt to promote public transit and reduce traffic congestion. Both Jogjakarta and Palembang cities are included in it. Unfortunately the presence of both Jogjakarta's TransJogja and Palembang's TransMusi has not been able to gain such popularity, though the fare is subsidized by local government. They assume that the subsidy will make the new transit system affordable for even the poorest group. This paper examines affordability of public transport and the magnitude of supply-side subsidies simultaneously in medium-sized city of Indonesia.

Authors explore affordability indices of both Jogjakarta and Palembang, where new transit systems are implemented in 2008 and 2010, respectively. In developing countries like Indonesia the affordability of urban public transport has attracted more attention during last decade, as policy and aid debates have gradually shifted from a preoccupation with justifying transport investment from an economic efficiency perspective to emphasizing the promotion of equity and pro poor objectives (TRL, 2003). It is inevitable that each of the study has taken its own perspective on what income measure to use and what fare measure to use,

and most have use a measure of poverty that is specific to the local circumstances. However, these differences make it difficult to compare the results between cities, but based on experience in a number of developing countries, it is clear that the affordability of urban public transport is considered an issue of importance throughout the developing world.

This paper aims to analyze the effectiveness of existing uniform transit subsidy by income groups in both Jogjakarta and Palembang cities. Given this justification, it is of interest to know how the benefits from transport subsidies are distributed. Though the purpose of such subsidy is not primarily to redistribute income, their incidence should be of interest to policymakers. In the final section authors described prerequisites of a balanced distribution of transit subsidies that can be encouraged to make the distribution of subsidy benefits better targeted.

2. LITERATURE REVIEW

The study of subsidies in urban public transport is not a new area. There is an extensive literature that focuses on the design and implementation of subsidies. There is a widely held belief that potential low income passengers are forced to curtail the number of trips that they make, use modes of transport that do not incur a direct cost, such as walking or cycling, or to live in locations that minimize their transport costs. This is particularly true now, when many urban transport services are provided by private operators who are under pressure to be financially self-supporting.

There is also evidence that the high cost of urban transport is having a negative impact on the lives of the urban poor, either through restricting their access to jobs that are within feasible walking or cycling distance, by consuming unsustainable proportion of their income, or by dramatically curtailing the number of journeys that they make.

Perry and Small (2005) provide quantitative estimates of subsidies required to achieve allocative efficiency in Los Angeles and Washington D.C., that should cover between 50% and 80% of average operating costs for buses and rail, respectively. For London, estimated figures are even higher (100%) due to the higher congestion attributed to private automobiles in this city.

However, there are two problems with this justification for urban public transport subsidies, especially as concerns developing countries. First, they are all “second best” efficiency arguments since there are other ways to come closer to correctly price

alternative travel modes. Fuel prices may be increased to internalize pollution and traffic risk externalities. Congestion tolls or infrastructure tolls can be used to make car users bare the full cost of their use of existing road space. Only if direct policies cannot be implemented, could urban public transport subsidies justified as a second option.

Second, many of these arguments may not be as strong in developing country contexts as in developed countries. Private car use, although rising, is usually far below the level in developed countries. In fact, in many developing countries, urban public transport is generally one of the major contributors to pollution, congestion and traffic risk problems. Therefore, it may be that urban public transport is underpriced as well as private car use. Indirect evidence for this is provided by Estache and Gomez-Lobo (2005) for the case of Santiago, Chile.

Meanwhile in both cities Jogjakarta and Palembang, Indonesia, the social justification of fare subsidies seems to be of more concern including for politicians. The social case for urban transport subsidies starts by recognizing the importance of accessible, available and affordable transport, especially for the low-income category of people.

Worldwide, an increase in awareness of economic costs of traffic congestion and environment degradation has resulted in a focus by authorities on curbing the use of private cars, especially for commuter trips, and public transport incentives. In developing countries like Indonesia, public transport has more important role, because its economic efficiency is vital for large volumes of non-car owners, while its capacity is needed to serve the high density, rapidly growing cities. These make urban public bus a crucial component of the city, which deserved to be adequately maintained and enhanced to meet this rapidly growing mobility needs (Badami & Haider, 2007; Vuchic, 2005).

Conversely, the existing urban public bus in developing countries are unable to cope adequately with the demand due to numerous factors, including inadequate road infrastructure, uncontrolled expansion of the cities, high urban population growth, low levels of income and poor traffic management (Iles, 2005). Lack of appropriate administrative framework for public transport operation and management is another hurdle leading to poor regulation of services in developing countries.

According to (Iles, 2005), the principal objectives of transport regulation would be to ensure that services are operated in accordance with government policy, that demand for public transport is satisfied as far as possible, that standards of quality and safety are maintained, and that fares are controlled at af-

fordable levels.

With respect to the improvement of public transport in developing countries, much attention should be given to the planning and regulation of public transport service. If not, the public transport system is likely to be rudimentary, particularly where services are unregulated and provided by a large number of small operators (Iles, 2005; Vuchic, 2005), which are the cases in both Jogjakarta and Palembang.

The facts reveal a challenge to the government and all related stakeholders to provide a more supporting transportation plan and policies. It is needed to retain current users and to attract new users. Thus, the process of policy and scenario development should carefully consider the need, expectation and perception of the community. It means it is not enough to rely solely on the point of view of government or operator. It also poses a challenge to investigate the community, user and non-user in more detail as a way to know better the need of community, as well as the decision process in selecting mode of transport.

At present transportation service in Indonesia is measured mainly by referring to technical measurement. Although, it is argued that transportation, as its nature, has a strong interaction with many facets of human aspects, e.g. psychology, economic or culture. A deep knowledge regarding many aspects of the community includes subsidy policy and its effectiveness is beneficial to provide a more adaptive of urban public transport.

3. DATA AND FINDING

(1) Transit highlight

Medium-sized cities in Sumatra island and Java island, respectively, are the target of evaluation, after new transit systems implemented over three to five years. **Table 1, Fig 1a and Fig 1b** shows the characteristics overview of Trans systems in both cities which are TransJogja in Jogjakarta and TransMusi in Palembang.

To better understand travel patterns authors analyze secondary data of 350 randomly sampled households that survey conducted in the end of 2012 in both cities Jogjakarta and Palembang. The data consists of monthly household expenditure (Rupiahs) on transportation and percent of income spent on transport, by income group, in both cities.

Table 1 Characteristics Overview of Transits

	TransJogja	TransMusi
Province	Jogjakarta Special Region	South Sumatera
Provincial capital	Jogjakarta	Palembang
Year of implementation	2008	2010
Number of fleets	54	120
Number of routes	3	8
Bus capacity	40	40-55
Average length/route	34	37
Number of bus stop/route	17	32
Subsidy available	Yes	Yes
Approach to competition	gross cost	net cost
Other modes within the city	bus, PT, rickshaw	bus, PT, rickshaw, water bus
Daily passengers	16,000	22,000
Way of payment	cash/card at bus stop	cash/card on the bus
Fare price comparison to PT	alike	more expensive
Dedicated lane available	No	No

PT: para-transit



Fig 1a The map of TransJogja network



Fig 1b The map of TransMusi network

During mid-May to mid-June of 2013 we conducted field surveys and explored public transportation in both cities (regular bus, Trans bus).

We also conducted the meetings with local staff

of transportation offices and local experts to gain insight of progress and challenges of development of new transit systems.

We examined the reliability characteristics of transit operators from view point of service quality such as number of fleets, number of routes, bus capacity, daily passengers, etc. We visited their workshop to ascertain the level of vehicle availability. Specifically, the goal of the both was to characterize the travel patterns of poor and non-poor households, to estimate transport expenditure and to evaluate fares subsidy policy.

As a city of tourism, education and culture, Jogjakarta is denser population of 15,695 people/km² compare to Palembang, whose growth relied on natural resources with a density 4,765 people/km². Jogjakarta also has a relatively high transient population, primarily due to its high concentration of universities and flourishing tourism sector. The result of ongoing urbanization and population growth within the city's limit geographical area is driving the urban footprint expansion beyond the city's boundaries.

Development in surrounding area is expected to be focused in the south and east, where suburbanization is already taking place. There is also a move to recognize Palembang as a part of a wider metropolitan area. In 2008, according to the City Statistics Office, some 6% of amount families in Palembang were identified as being very poor, 13% as being poor and further 13% as being nearly poor, amounting to some 32% of all families.

Transit service reliability has been defined in variety of ways. From one point of view, it is defined as the ability of a transit system to adhere to a schedule or maintain regular headways and a consistent travel time. Based on authors explored with a number of routes and times the headway and travel time of both TransJogja and TransMusi cannot be predicted. Headway at bus stop and terminal varies from ten minutes to forty minutes depend on level of congestion and weather conditions. When it rains service reliability will decrease, where the water-logging usually causes congestion, especially at intersections.

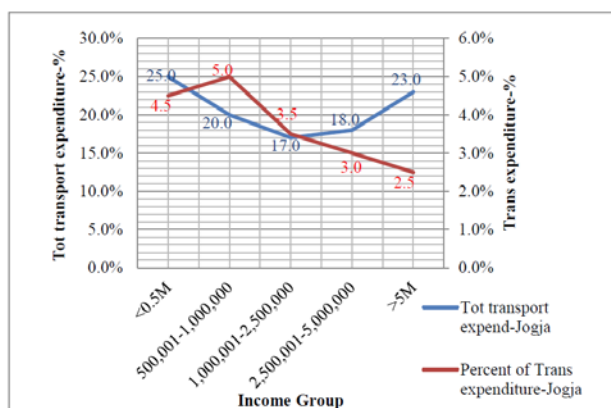
Estimating travel time is more difficult because as bus speed is not constant and the route is quite long compared to regular bus. As a comparison an average length per route of regular buses of Jogjakarta and Palembang is 38.7 km and 10 km, respectively, with more number of routes. Despite larger capacity than regular buses, both TransJogja and TransMusi is worse in terms of headways although more convenient because it uses air conditioner.

Fleet number of Trans buses is also less than

regular buses which some operators in Jogjakarta and Palembang operate around 150 buses and 225 buses, respectively. As the result Trans bus and regular bus tend on unhealthy competition in getting the passenger. As a comparison the number of passengers per vehicle per day of both TransJogja and TransMusi are just as much as 295 and 183, respectively, while the World Bank standard is 250 to 750. With limited number of passengers and also revenues to pay for better buses, both cities and bus companies are stuck with older, poorly maintained buses. Budgets for upgrading buses or replacing them, or even replacing worn parts, can be tiny or non-existent as seen clearly in TransJogja and TransMusi. Vehicle availability was only 88% and 80%, respectively, because the large number of buses were damaged and not repaired immediately.

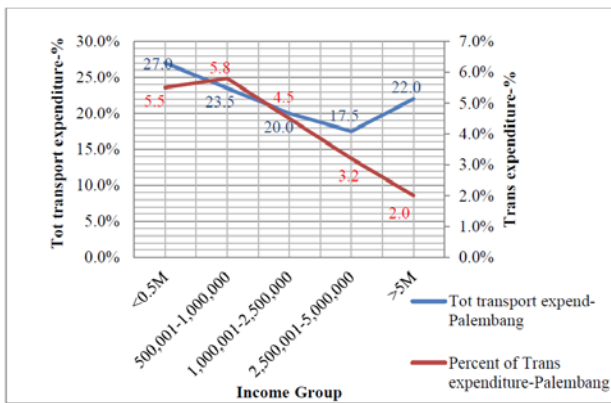
(2) Transport expenditure and affordability indices

As cities expand, the price of more accessible land is increased. Poor people are forced to live on less expensive land, either in slums or on the periphery of the city. As average income grow and car ownership increase, the patronage, financial viability, and eventually quality and quantity of public transport diminishes. Motorization, which is permitted by the growth process, may thus also make some poor people even poorer. In particular, in the absence of efficient congestion pricing for road use, piecemeal investment to eliminate bottlenecks will almost certainly benefit the relatively wealthy at the expense of the poor as shown in **Fig 2a** and **Fig 2b**.



Source: own modification based on Appendix A

Fig 2a Total transportation expenditure and Trans expenditure by income group-Jogjakarta



Source: own modification based on Appendix B

Fig 2b Total transportation expenditure and Trans expenditure by income group-Palembang

Both graphs and figures show the levels of total transport expenditure and Trans expenditure by income groups, respectively, in Jogjakarta and Palembang. Those figures in the both graphs simply modified from data's of the monthly household expenditure (Rupiahs) on transportation and percent of income spent on transport, by income group. Based on **Fig 2a** and **Fig 2b**, an average transport expenditure of Palembang is higher than Jogjakarta, except for the high and highest income groups which are slightly lower, because transportation costs outside of Java are generally more expensive. The average percentage of Trans expenditure in Palembang is higher than the Trans expenditure of Jogjakarta, except for the highest income groups. This is because the city of Palembang set higher fares and lower subsidies, so that bus improvement project does not overburden the city budgets.

TransMusi set a flat rate of Rp 5,000, while TransJogja is only Rp 3,500. (The data of mean monthly household expenditure [Rupiahs] on transportation and percent of income spent on transport in Jogjakarta and Palembang, by income group, contained in **Appendix A** and **Appendix B**, respectively).

Typically, average household expenditure on transportation increases with income but on the contrary, where the poorest and the poor people in both cities spend highest and higher, respectively, compare to other income categories. The lowest income group of Jogjakarta and Palembang that spend 27% and 25% of their income on transportation, respectively, reflects the poor location of many low income households in urban periphery, where low demand and long travel distances push up fares, and a high dependence on informal transport modes with unsubsidized fares.

In other words, these problems are more related to availability of transport refer to route possibilities, timings and frequency. Whatever the purposes of an

individual journey, be its education, work, personal services, or another, his/her activities are constrained by the route and the time taken traveling. Even if an individual has a bus stop within a reasonable distance, say 500 meters of their home, the amount of use it will be to any individual entirely depends on where he/she wants to go, how often, and how long the whole journey is going to take. If most of these factors is not satisfied, as shown in both TransJogja and TransMusi, public transport will not be a favorable option for that trip, either a different mode may be used or the trip may not be made at all.

By using the methodology proposed by Carruthers, Dick and Saurkar (2005) the percentage of per capita income required to pay for 60 trips per month is presented for the average household and for households in the first quintile of the income distribution. In this research the middle-income group earning Rp 1,000,000 to Rp 2,500,000 assumed as average household and households earning less than Rp 500,000 represents the bottom quintile. Based on **Fig 2a** and **Fig 2b** the average affordability indices of Jogjakarta and Palembang are 17% and 20%, respectively. **Table 2** shows affordability indices in both cities, whose figures are higher compare to affordability indices across cities and countries.

In term of average affordability indices, both cities are about two times higher than Sao Paulo and roughly equivalent to Buenos Aires in the bottom quintile of affordability indices. As a comparison to other cities in same region, an average affordability indices of Kuala Lumpur and Manila is just 5%, or one-fourth of Palembang, expressed transport expenditure is four times more expensive.

Table 2 Affordability indices for selected cities

	City	Affordability Indices	
		Average	Bottom Quintile
1	Palembang	20%	27%
2	Jogjakarta	17%	25%

Based on those comparison figures, urban public transport system in both cities is too expensive, even this would require defining a benchmark of what is considered affordable. Affordability indices are quite high in both cities also indicates that policy intervention through fare subsidies is not effective to decrease transportation expenditure of the poorest group.

(3) Magnitude of Supply-side Subsidies

Actually, there are a number of different approaches to competition for bus systems. In its recent transport review, the World Bank (2001) provides a

spectrum of possible regulatory arrangements, ranging from pure competition to complete government control and operation of the system. Gross Cost Service Contracting involves contracting with a private bus operator for specified services at a fixed price, or one based on one or more parameters of service such as vehicle kilometers. The contract is usually awarded through competitive tendering. The operator must pass through all fare revenues, or revenues can be collected separately. Jogjakarta adopt this system while Palembang selected Net Cost Service Contracting where similar in some respects to gross cost contracting, but requires the operator to derive revenues from fares.

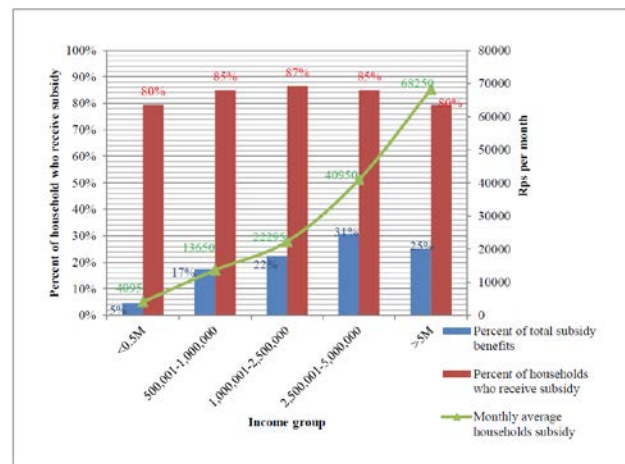
In addition, the fact on field survey also showed the different fare subsidy level of both cities Jogjakarta and Palembang, as shown in **Table 3**. TransJogja users receive fare subsidy of nearly 40%, while users of TransMusi receive fare subsidy of less than 30%. The figures of both monthly average household expenditure and monthly average household's subsidy are modified and calculate of the data in **Appendix A** and **Appendix B**. As an example, the household earning less than Rp 500,000 and monthly expenditure on TransJogja as much as Rp 11,250, in practice be receive subsidies as much as Rp 4,095 under a worth of 36.4% of fares subsidy.

Table 3 Trans expenditures and subsidies in both cities Jogjakarta and Palembang, by income group

Income group	Percent of sample	Monthly Average Household Expenditure (Rps)		Monthly Average Households Subsidy (Rps)	
		TransJogja	TransMusi	TransJogja (36.4%)	TransMusi (28.6%)
<0.5M	24.5/26.3	11,250	13,750	4,095	3,932
500,001-1,000,000	28.3/25.8	37,500	43,500	13,650	12,441
1,000,001-2,500,000	22.4/23.7	61,250	78,750	22,295	22,522
2,500,001-5,000,000	16.6/17.4	112,500	120,000	40,950	34,320
>5M	8.2/6.8	187,500	150,000	68,250	42,900

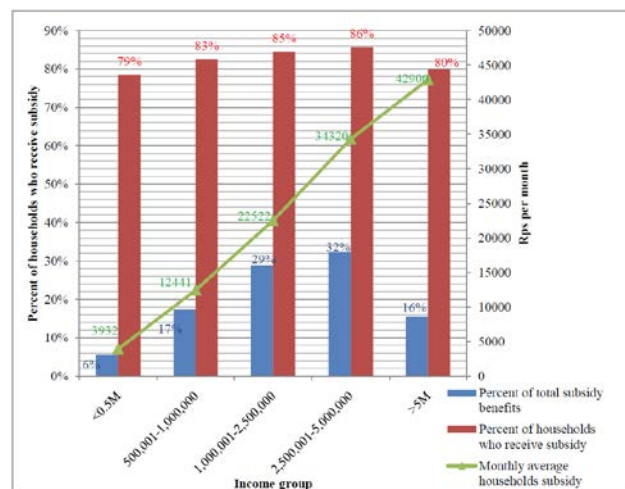
Source: own calculation

Referring to the **Eq. (1b)**, an equal distribution of subsidy benefits implies that the percentage of subsidy benefit receive by income category equals its share in the population, as shown in **Fig 3a** and **Fig 3b**. The percentage of households who receive subsidy is obtained by $100\% - (\text{per cent of total transport expenditure} - \text{per cent of Trans expenditure})$, by income group. Since both of cities applied a supply side of subsidy mechanism form of distribution graph of subsidy benefit did not differ significantly.



Source: own calculation

Fig 3a Distribution of transit subsidy in Jogjakarta



Source: own calculation

Fig 3b Distribution of transit subsidy in Palembang

Author's findings indicate that while the poorest households constitute one-fourth of total households in the sample of Jogjakarta and Palembang, they receive only 5 and 6 percent, respectively, of transit subsidies. The wealthiest households, who constitute 8 and 7 percent in the sample of Jogjakarta and Palembang, receive transit subsidy that are more than three time and more than two times larger than their equal share, respectively, under the uniform distribution of the subsidy across income groups. The middle income group, earning Rp 1,000,000-Rp 2,500,000 per month receives subsidy benefits in roughly equal proportion to their share in the population of both cities. The high income group, earning Rp 2,500,000-Rp 5,000,000 per month receives about one-third subsidy benefits in both cities, respectively.

Meanwhile there are a number of different approaches to competition for urban bus systems. In its recent transport review, the World Bank (2001) provides a spectrum of possible regulatory arrangements, ranging from pure competition to complete gov-

ernment control and operation of the system. Some of the different approaches are included gross cost contract and net cost contract. The Jogjakarta local authority issues a gross cost contract to a bus operator giving him the exclusive right to operate bus services in the area that forms all of Jogjakarta city. Since the financial basis of the contract is payment the operator of the specified sum to provide the specified service, with all revenue collected being for the account of the authority, the operator is not concerned with the efficient operation of the route. On the other hand, the local transport office has not sufficient authority, trained staff and resources to monitor and enforce the terms and conditions of the contract.

Otherwise, Palembang municipal government applied net cost contract in accelerating its bus improvement project, where the operator provides a specified service for a specified period and retains all revenues. Under a net cost contract the operator has to forecast both his costs and his revenues. Moreover the Palembang municipality wishes to give the operator some flexibility to amend routes and schedules to make the network as attractive and efficient as possible. However, since the operator is a municipal owned company it is not naturally separate from the authority. Ideally the responsibilities of the operator and the authority should be clearly separated and set out in writing as an integral part of the contract between the two parties.

According to approach to competition, the net cost of TransMusi is slightly better than the gross cost of TransJogja, since more than a half of subsidy benefits received by the lowest to medium income groups of Palembang. In contrast, as much as 56% of transit subsidy in Jogjakarta benefiting households who should not be receiving benefit and represent the leakage of resources of the policy to non deserving households.

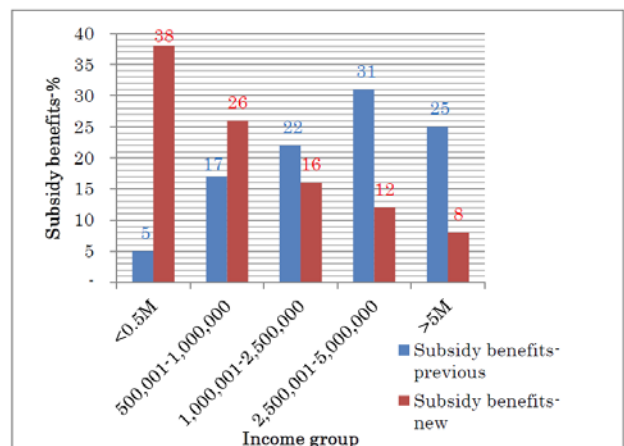
In both cities Jogjakarta and Palembang, the errors of exclusion –who do not receive any benefits– for the poor, are high enough. They are 20% and 21% respectively. This reflects the fact that a large fraction of persons in the lowest income group does not use Trans services in spite of subsidy fares for transit bus.

What is perhaps more troubling from a targeting perspective is the fact a high percent of subsidies goes to the non-poor. Given supply side subsidies appear to be the most feasible method of subsidizing public transit in both Jogjakarta and Palembang. Authors therefore ask what whether current subsidies should be increased, based on distributional grounds.

(4) Balance Distribution of Transit Subsidies

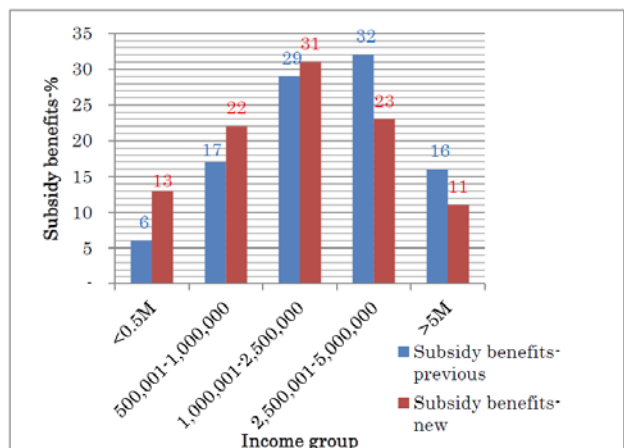
A very common supply side subsidy occurs when governments fund infrastructure investments without users having to pay for this investment through fares. Targeting the poor through infrastructure investments is bound to be less focalized than demand side alternatives unless the infrastructure funded is particularly useful to the poor. Projects may include bicycle routes or walking infrastructure, and in general all infrastructures aimed at improving access of the poor to public transport. To encourage more poor people to use transit buses means more subsidies received by those who are eligible as shown in Fig 4a which reflects a balance distribution.

The state of balance is assumed to occur with two prerequisites. First, TransJogja ridership is increased constantly include the wealthiest households to the poorest households, where as many as 93% of low-income groups to the middle-income group are using transit. Second, the poorest group of households increased their incomes by one level and at the same time households expenditure on transit also increased threefold.



Source: own calculation

Fig 4a Optional distribution of transit subsidy- Jogjakarta



Source: own calculation

Fig 4b Optional distribution of transit subsidy- Palembang

While **Fig 4b** describes changes in the distribution of subsidy benefits if income of the poorest households to the medium income group is increase followed by an increases of expenditure on transit by one level. Percentage of the TransMusi users is assumed same as before so that the graph more reflects a naturally mechanism. Even the distributions of subsidy benefits is slight better than previous, but the middle income groups are the receiving more beneficiaries of fares subsidy.

4. CONCLUSIONS

A gross cost contract is applicable if the urban transport authority proposes to engage a private entity solely to provide service at the lowest possible cost. There must be many bidders in the market that are willing to quote competitive rates to win the contract. Such a contract is also applicable in cases where a high degree of regulation and monitoring exists, enabling the authority to check compliance with operating and performance standards.

A net cost contract is applicable in cases where demand for the bus transport services has been established in an objective and credible manner, and where public funding is low but fare revenues are enough to cover operating costs. As this type of contract transfers the operating and demand risks to the private operator, there must be at least a moderate level of regulation and monitoring. The private operator has incentive to improve its profits by bringing in operating efficiency and stimulating demand. However, the both gross cost and net cost, which are implemented in Jogjakarta and Palembang, respectively, do not fully emulate best practices, and tend to focus on only the fare subsidy, even though subsidies are not well targeted. Urban public transport system is too expensive in selected cities and therefore that something should be done about it.

The recognition that transport is important for people's live, especially among the poor, is not sufficient to justify subsidies specific to the transport sector. This is evidenced by the high level of affordability indices in both cities indicates that policy intervention through fare subsidies is not effective to decrease transportation expenditure of the poorest group.

Based on the result obtained from the evaluation, it can be concluded that these Trans systems have not contributed to improve the urban public transport system in these two cities. However, all these systems still have many problems in planning, operation and the most common problem are the lack

of the Trans management system capacity, include fare subsidy policy.

Given supply side subsidies appear to be the most feasible method of subsidizing public transit in the city. Targeting the poor through infrastructure investments is bound to be less focalized than demand side alternatives unless the infrastructure funded is particularly useful to the poor. To encourage more poor people to use transit buses mean more subsidies received by those who are eligible and to make the distribution of subsidy benefits better targeted.

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APPENDIX A

Mean monthly household expenditure (Rupiahs) on transportation and percent of income spent on transport in Jogjakarta city, by income group

	<0.5	0.5-1.0	1.0-2.5	2.5-5.0	>5.0
Private car	2,500	9,750	52,500	281,250	750,000
TransJogja	11,250	37,500	61,250	112,500	187,500
Bus-conventional	10,000	15,000	17,500	18,750	37,500
Para-transit	12,500	30,000	52,500	75,000	75,000
Motorcycle	16,250	33,750	43,750	75,000	150,000
Taxi	2,500	7,500	21,000	30,000	127,500
Fuel	5,000	9,000	26,250	45,000	262,500
Vehicle maintenance	2,500	7,500	22,750	37,500	135,000
Total transportation expenditure	62,500	150,000	297,500	675,000	1,725,000
Share of income [Trans expenditure]	4.5 %	5.0%	3.5%	3.0%	2.5%
Share of income [total transport expend]	25.0%	20.0%	17.0%	18.0%	23.0%

Source: Jogjakarta transport authority-with own modification

APPENDIX B

Mean monthly household expenditure (Rupiahs) on transportation and percent of income spent on transport in Palembang city, by income group

	<0.5	0.5-1.0	1.0-2.5	2.5-5.0	>5.0
Private car	2,500	9,750	52,500	281,250	750,000
TransMusi	13,750	43,500	78,750	120,000	150,000
Bus-conventional	10,000	15,000	35,000	18,750	37,500
Para-transit	12,500	30,000	52,500	45,000	75,000
Motorcycle	16,250	25,500	43,750	41,250	105,000
Taxi	2,500	11,250	21,000	30,000	127,500
Water bus	3,750	9,750	17,500	37,500	75,000
Fuel	3,750	16,500	26,250	45,000	225,000
Vehicle maintenance	2,500	15,000	22,750	37,500	105,000
Total transportation expenditure	67,500	176,250	350,000	656,250	1,650,000
Share of income [Trans expenditure]	5.5 %	5.8%	4.5%	3.2%	2.0%
Share of income [total transport expend]	27.0%	23.5%	20.0%	17.5%	22.0%

Source: Palembang transport authority-with own modification

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