

UNIVERSITY OF THE PHILIPPINES CENTER FOR INTEGRATIVE AND DEVELOPMENT STUDIES **PROGRAM ON ALTERNATIVE DEVELOPMENT**

UP CIDS DISCUSSION PAPER • 2021-02

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Addressing the "blind side" of the government's jeepney "modernization" program

Teodoro C. Mendoza¹

EXECUTIVE SUMMARY

Air pollution in densely populated cities like Metro Manila costs billions of pesos yearly. But putting the blame for air pollution, as well as traffic jams, to the iconic jeepney is too much to bear and too unfair for them. There are only 73,000 jeepneys in Metro Manila (in comparison to 2.5 million vehicles) and in the entire country, there are only around 300,000 of them (compared to a total of 12.75 million vehicles). The iconic jeepney is the product of the creativity, ingenuity, and resourcefulness of the Filipino. Under the pretext of the environmental damages caused by and safety concerns over "traditional" jeepneys, the government launched its Public Utility Vehicle Modernization Program (PUVMP) in 2017. Under this program, old public utility vehicles (PUVs)-including jeepneys-are to be replaced with locally assembled modern PUVs that are more environment-friendly and fuel-efficient. The program also aims to provide safer, comfortable, and reliable public transport for Filipinos, while also alleviating the health hazards of inefficient and smokebelching old PUVs that contribute to GHG emissions and climate change.

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However, this "solution" to road safety and climate change is seen as a problem by its stakeholders, given the divergent realities in the backdrop of the program and the import-dependent nature of the said "modernization." For them, the problem that the program is trying to address is multi-factored, thus it cannot be remedied by simply importing and changing the jeepneys or by aggregating them through either cooperative-led or private-led fleet management. The lack of acknowledgment of this multi-factored problem of traditional jeepneys and the downside of an import-dependent solution to such problem is the blind side of the PUVMP.

This research was conducted to add a "mirror" to see and cover the blind side of the program and builds on study-backed views, early route evaluation, and existing policy/legislative proposals. The working hypothesis is that the phaseout of old, and unconsolidated traditional jeepneys is detrimental and unnecessary. With effective transport industry regulation in the short-term and government support for industrialization in the long-term, the traditional jeepneys should be allowed to co-exist with the imported modern jeepneys, or die a natural death.

The main features of PUJ modernization

The current PUJ modernization program has three main features. First, the modern jeepneys are expensive or have high acquisition prices. Their prices start at Php 1.6 million per unit, increasing to about Php 2.5 million per unit, excluding the interests paid annually at six percent and amortization for seven years. Second, the modern jeepney has unproven durability and longevity and there are doubts if its body and Euro 4-compliant engine will last up to seven years. Finally, there are questions on the fleet management scheme, which will be organized either through a cooperative-led setup or through consolidation.

To address the high price of modern jeepneys, two government banks—the Development Bank of the Philippines (DBP) and the Land Bank of the Philippines (LBP), had each designed a loan facility for the PUVMP, the PASADA (Program Assistance to Support Alternative Driving Approaches) and SPEED (Special Package for Environment-Friendly and Efficiently-Driven Public Utility Vehicles) programs, respectively. However, what is not considered is the fact that the modern jeepneys are expensive in the first place because they are made from components and equipment that are all imported and that the price of the units had increased from only Php 1.4 to 1.6 million in 2018 to Php 2.5 to 2.6 million in 2020.

The main driving force for modernizing the jeepney is the environmental unsoundness of traditional jeepneys—they are fuelinefficient, smoke-belching, and emit dangerous gases and particulate matter. They are likewise considered as an eyesore due to their dilapidated bodies. However, the first batch of modern jeepneys that were on the roads in 2018 are already starting to belch smoke. This raises a question on the durability and longevity of modern jeepneys. It is very likely that the owners will shoulder the costs of repair and maintenance of broken or malfunctioning modern jeepneys. There are also claims that the Euro 4 engines in the units were not tested for longevity under different situations.

The central organizational features of jeepney modernization are the formation of cooperatives and the fleet management scheme. Forming and joining transport cooperatives are a requirement before small jeepney drivers or operators could avail of the equity subsidy and the bank loans to finance their purchase of modern jeepney units. They should likewise surrender their individual franchises upon joining the cooperative or when they decide to be consolidated privately. After the formation of cooperatives as a prerequisite for the financing of modern jeepneys, cooperative-led fleet management calls for infrastructure, resources, and good working relationships in order to be effective.

The numerics of jeepney modernization and target date of completion

There are two numeric aspects of jeepney modernization that must be considered to achieve the target date of the project's completion. These assume that there is no more opposition from the drivers and operators through their associations (i.e., cooperative-led fleet management or private-led consolidation). These are the speed of local assembly of the modern jeepneys and financing for the jeepney units.

With the very slow rate of local assembly of modern jeepneys (at only 1,000 units per year), it will take 70 years before all the traditional jeepneys in Metro Manila will be replaced with modern jeepneys. On the other hand, it will take 270 years before all the traditional jeepneys will be replaced nationwide, even if there is no more opposition from drivers and operators. While the government has postponed the phaseout of traditional jeepneys due to the COVID-19 pandemic, it has barely a year left before the end of the current administration ends its term in July 2022.

In terms of financing, a large amount is needed for the program. For Metro Manila alone, about Php 11.68 billion is needed for the 73,000 traditional jeepneys to be replaced. To replace 300,000 traditional jeepneys nationwide, financing will amount from Php 540 billion to Php 750 billion. Given this, will government banks have sufficient money to fund this enormous project of the government and will these banks provide loans to new cooperatives that are yet to have a track record in managing huge amounts of loans? The expensive modern jeepney seems to present an insurmountable problem rather than a solution.

Financial analysis of the jeepney modernization program

The simple logic used in the financial analysis of the government's jeepney modernization program involves whether loans for the purchase of units could be repaid in seven years, while ensuring decent income for drivers and operators.

There are two major costs involved: fixed costs (FC) and variable costs (VC). The sum of these is the total cost (TC). The fixed costs include depreciation (after ten years) and fixed amortization (capital plus interest). The variable costs include two major items: the operational costs of the jeepney and the cooperative-fleet management expenses.

The total amount paid for the modern jeepney is considerably raised by an increase in interest (from three to six percent), which may lead to fare increases to cover the total costs incurred and to provide decent wage to drivers and returns to operators. An extension of the amortization schedule will cause a slight decrease in amortization payments and to daily earnings needed to cover total costs. There is also a decrease in fares per passenger, albeit only minimal. In the end, the price of the modern jeepney price remains as the main determinant for passenger fares.

General discussion and synthesis:

The "blind sides" of jeepney modernization

Based on insights from jeepney drivers and operators and on collected data, the government's jeepney modernization project has two main "blind sides:" the high price per unit of the modern jeepney and the domino effect of a possible jeepney fare hike to cover the cost of purchasing modern jeepney units. The high unit price in peso is attributed to being imported in dollars and the high peso-to-dollar exchange rate. High unit prices means high yearly payments, which will be compounded by high interest. Amortizations per year and per day increase as the base price of the modern jeepney increases, which translates to high earnings through passenger fares needed by the driver or operator per day to cover the total costs of the unit. As the price of the modern jeepney increases, passenger fares also increase.

The difficulties in accessing financing for the already expensive modern jeepneys and the tight amortization schedule leads to the possibility of increasing passenger fares. In turn, this could produce a domino effect. An increase in passenger fares means higher costs of living, as it will translate to higher transport costs of food and other commodities from producers to consumers. Higher fares will also mean higher transport costs per family or household. In effect, higher transport costs will mean a higher cost of living. A consequence of this is that daily wage earners will demand higher wages, which will have repercussions on the economy at large.

Addressing the blind sides:

Strategic options for achieving jeepney modernization

Achieving the goals of jeepney modernization requires a considerable amount of resources (e.g., funding and infrastructure) and suitable management (e.g., cooperative-led or private-led fleet management). Taken altogether, it will take some time to plan and implement a project of this scale.

What can be done then? The recommendations and actions are divided into short-term (to be done within one to ten years)—which also marks the transition stage—and long-term ones (to be done from eleven to twenty-five or more years).

The following are recommendations for the short-term or transition stage:

- Allow the overhaul or re-manufacture of older engines in order to considerably reduce emissions and pass the emission standards;
- Encourage the local fabrication of modern jeepneys, rather than relying on foreign companies; and
- Relax the engine type prescriptions (Euro 4) for jeepneys, provided that emission standards (per the Clean Air Act) are met.

For the medium- to long-term, the recommendation is what called "localized modernization." We can locally produce rubber tires (which, however, will require manufacturing capacity) and vehicle parts that do not involve "rocket science" or complicated mechanisms.

Localized modernization will generate more jobs, avoid dollar outflows due to importation, increase the value of our products (particularly rubber), generate higher incomes for our rubber growers, and provide higher revenues for local providers and makers of vehicle parts and accessories.

Ultimately, localized PUV modernization should be viewed as a component of the country's overall sustainable and inclusive economic development framework.

KEYWORDS

Jeepney modernization, public transport, transportation policy, cooperative-led fleet management, consolidation, industrialization

1. Introduction

[R]esponding to a strike mounted by jeepney drivers and operators in protest of the planned modernization drive, President Duterte memorably said: "If you can't modernize that, leave. You're poor? Son of a bitch, go ahead, suffer in poverty and hunger, I don't care." (*PDI* 2018)

Air pollution in densely populated cities like Metro Manila costs billions of pesos yearly. According to a report by Blacksmith Institute and Clean Air Asia (2017, 1), "[t]he air quality in major urban areas such as Metro Manila is becoming a serious problem with considerable health implications estimated to be about 1.5% of the country's [gross domestic product]. As such, measures to reduce air pollution are being explored urgently, including those related to the jeepneys." But putting the blame for air pollution, as well as traffic jams, to the iconic jeepney is too much to bear and too unfair for them. The jeepney is the product of creativity and resourcefulness of hardworking mechanics after World War II, beginning with the pioneering companies Sarao Motors and Francisco Motors. It symbolizes not only Filipino culture and ingenuity, but also how Filipinos adjust after suffering extreme adversity brought about by a war that is not theirs and caused deaths of more than half a million. Leftover American military jeeps were transformed into the jitney (which was later called jeepney) to cater to the need of people for a vehicle faster than the *kalesa*, the human-pedaled tricycle, and the rural carabao-pulled *gareta* or *kariton*. However, it is true that most jeepneys are running on secondhand or imported surplus engines and are poorly maintained. President Duterte wants to remove smoke belching jeepneys on the road, and his obedient transport officials are doing everything to make it happen. Vehicle manufacturers, on the other hand, see this project as a big business opportunity (Sarne 2018).

In 2015, transport greenhouse gas (GHG) emissions were estimated at 28.4 MtCO2e, which is about 30 percent of energy-related GHG emissions and the largest source of air pollution in the Philippines. According to one estimate, jeepneys account for about 15.5 percent of the country's transport GHG emissions in 2015 (Mariano n.d.). Another estimate shows that jeepneys emit about 40 kilograms of carbon dioxide daily (Frangoul 2015). These data are not precise as the embedded emissions of buses, cars, vans, trucks, and motorbikes were not included in the calculations. As of 2020, there are 12.75 million vehicles in the country and there are only 270,000 jeepneys (Agaton et al. 2020).

Under the government's Public Utility Vehicle Modernization Program (PUVMP), which was launched in 2017, old public utility vehicles (PUVs)—including jeepneys—are to be replaced with locally assembled modern PUVs that are fueled by either the brand new Euro 4-compliant diesel engines or electric motors. The modern PUVs are also expected to be airconditioned, equipped with safety features (all imported), and operated in a consolidated or cooperative manner under what is called as "fleet management." The program's goal, accordingly, is to provide safer, comfortable, and reliable transportation systems for Filipinos, while also alleviating the health hazards of inefficient and smoke-belching old PUVs that contribute to GHG emissions and climate change (Frangoul 2015).

However, this "solution" to road safety and climate change is seen as a *problem* by its stakeholders, given the divergent realities in the backdrop of the program and the import-dependent nature of the said "modernization." This, in turn, suffers from high peso costs (exchange rate factor) and dollar outflows that set an imbalance and weaken the peso, while generating miniscule employment to importing countries like the Philippines.

Some traditional jeepneys are an environmental and safety challenge, with the vast majority of these being poorly maintained and operated. The causes and effects of such must be put in proper perspective. The cause, for example, cannot all be limited to the type of engine or age of the jeepney if these are properly maintained. Corruption and other gaps in the regulatory system are a factor in the presence of many poorly maintained and operated jeepneys on the roads. The effects must not also be exaggerated because the jeepney's contribution to the country's overall air pollution, carbon footprint, and road accidents is not that huge as being portrayed. This is not surprising since their numbers (270,000 units) are so small when compared to the total number of vehicles in the country (12.25 million) (Agaton et al. 2020).

The other reality is that jeepneys fill the void in public transport for hundreds of thousands to millions of commuters who ride on jeepneys for day-to-day mobility. They also play a vital role in the transport of agricultural produce and fisheries, provide employment for tens of thousands of drivers, and contribute to thousands of small businesses, whether directly and indirectly.

While divergent realities exist, these are not sufficient excuses or justifications to sustain the operation of old, unsafe, and pollutive jeepneys. Instead, they are a reminder that the problem that the PUVMP is trying to address is multi-factored, thus it cannot be remedied by simply importing and changing the jeepneys or by aggregating them through either cooperative-led or private-led fleet management. The lack of acknowledgment of this multifactored problem of traditional jeepneys and the downside of an import-dependent solution to such problem is the *blind side* of the PUVMP.

This policy research was conducted to add a "mirror" to see and cover the blind side of the program and builds on study-backed views, early route evaluation, and existing policy/legislative proposals. The working hypothesis is that *the phaseout of old, and unconsolidated traditional jeepneys is detrimental and unnecessary.* With effective transport industry regulation in the short term and government support for *industrialization* in the long term, the traditional jeepneys should be allowed to co-exist with the imported modern jeepneys, or die a natural death.

2. The main features of PUJ modernization

According to Land Transportation Franchising and Regulatory Board (LTFRB) chair Martin Delgra III, public transport should be "adequate, safe, and comfortable, [where] travel time [...] is predictable, [and] drivers [...] are disciplined, competent, and mindful of the common good" (*PortCalls Asia* 2017). Contrary to this view, traditional jeepneys are viewed to have caused much inconvenience to the public and as a threat to human health and the environment (Padillo 2019).

Listing or describing what public transportation ought to be should lead us to the examination of the main features of the current PUJMP. First, the modern jeepneys are expensive or have high acquisition prices. Their prices start at Php 1.6 million per unit, increasing to about Php 2.5 million per unit, excluding the interests paid annually at six percent and amortization for seven years. Second, the modern jeepney has unproven durability and longevity and there are doubts if its body and Euro 4-compliant engine will last up to seven years. Finally, there are questions on the fleet management scheme, which will be organized either through a cooperative-led setup or through consolidation.

Before discussing the implications of these features, the "modern" in the modern jeepney should be discussed. What are now being



Figure 1 According to a study, public transport accounts for 80 percent of ridership and trips in urban areas, with 40 percent of these being provided by jeepneys (DOTr n.d.b)

Credits and Source: Noel Celis/AFP/Getty Images, in Westerman 2018

called modern jeepneys (see Figure 2 on the opposite page) do not necessarily have the signature features of the traditional jeepney (see Figure 1 above). Foreign Affairs Secretary Teodoro Locsin, Jr. says the traditional jeepney is a testament to the resourcefulness of Filipinos and that the modernized jeepney "looks like an 'inflated condom'" (Lee-Brago 2020). Sec. Locsin thus recommends retaining the traditional jeepneys and improving their engines, instead of replacing them altogether (ibid.).

The modern jeepney has the following features: engines with low emissions in compliance with Euro 4 standards or better; speed limiters; closed-circuit television (CCTV) cameras for selected types of PUVs; dashboard cameras; Global Positioning System (GPS) sensors; accessibility features for persons with disabilities (PWDs); comfortable seats; and wi-fi access, all in accordance with the Department of Transporation (DOTr)'s omnibus guidelines for PUVs (Department Order (DO) No. 2017-011). The reason that Euro 4 engines are favored is these significantly reduce sulfur emissions from both diesel and gasoline by 450 parts per million (ppm) and benzene emissions by about four percent (Pabustan 2017). Moreover, Euro 4-permitted carbon monoxide (CO) emissions are 1.0g/km and 0.5g/km for gasoline and diesel, respectively (ibid.).

An option for the traditional jeepneys is to rebuild or retrofit the units and apply for a Certificate of Compliance to Emission Standard (CCES) with the Land Transportation Office (LTO), in accordance to Section 10 of the Department of Environment and Natural Resources (DENR)'s Administrative Order No. 2010-23. However, for Undersecretary Tim Orbos of the DOTr, the traditional jeepneys cannot just simply replace their old engines with new ones (*CarGuide. PH* 2018). This is because Euro 4 engines are "a complete emission system that measures not only the quality of the exhaust fumes but also the performance of the engine, fuel system, air intake and exhaust systems, engine management, performance feedback system, does on-board diagnostics, and many more" (ibid.).

Moreover, modern jeepneys should be aptly called "mini buses" as they could accommodate 24 seated passengers and 10 standing passengers. The typical seating capacity of buses is from 50 to 60 passengers. In effect, the otherwise called modern jeepneys should



Figure 2 The modernized jeepney, according to Foreign Affairs Secretary Teodoro Locsin, Jr., "looks like an 'inflated condom'" Credits: Jess M. Escaros Jr./Philippine News Agency (PNA)

be called "mini buses" as they have literally abolished the signature Filipino jeepney (see Figure 3 on the opposite page).

2.1 Cost of the modern jeepney

To address the high price of modern jeepneys, two government banks the Development Bank of the Philippines (DBP) and the Land Bank of the Philippines (LBP), had each designed a loan facility for the PUVMP, the PASADA (Program Assistance to Support Alternative Driving Approaches) and SPEED (Special Package for Environment-Friendly and Efficiently-Driven Public Utility Vehicles) programs, respectively.

Why they are so expensive? The PUVMP calls for a brandnew vehicle with body and parts following the Bureau of Philippine Standards (ibid.). What is missing is that the brand-new vehicles are made from components and equipment that are all imported. According to Section 2.2.3 of DOTr's DO 2017-11, these include a Global Navigation Satellite System (GNSS) receiver, free wi-fi, CCTV cameras, dashboard camera, automatic fare collection system, speed limiter, and imported Euro 4 engines (which are very expensive at half a million pesos). According to the same guidelines, public utility jeepneys (PUJs) must be "compliant with prescribed DENR emission standards or better." The Philippine Clean Air Act of 1999 (Republic Act (RA) No. 8749) discusses in detail these emission standards.

A directly related concern on the modern jeepney is the sudden price increases of the already expensive units. The starting price of a unit in 2018 was only Php 1.4 to 1.6 million. This price has increased to Php 2.5 to 2.6 million in 2020. While both parties (the DOTr/ LTFRB and jeepney drivers/operators) have the same line of thinking that jeepney modernization should not increase fares and the same concern regarding the riding public's capacity to pay, there is certainly a fear that the high price of the modern jeepney will inevitably raise jeepney fares. The modernization project definitely comes with a price tag. Would not high costs attributed to high-quality components translate to high-priced jeepneys? Would not additional infrastructures (e.g., social, physical) that must be put in place add up as well?

PNS 2126:2017 PUV Class 2 & 3 Dimensions

Table 1 - Overall height, width and length Unit: cm Classification Overall height (h), Overall width (w). Overall length (/). minimum maximum maximum Class 2 Must conform to the floor-to-ceiling Class 3 235 700 height of 175 cm



Figure 3 The dimensions and structure of Class 2 and 3 public utility vehicles based on Philippine National Standard Source: BPS 2017

Driving or operating them will also incur an additional cost that were not foreseen by drivers' and operators' associations. This is the requirement for a "lay-over/garage with sufficient space for all units, plus additional space of at least 30% of the total PUV space requirement" (Sec. 2.2.3, DOTr DO 2017-011). An expensive jeepney unit must be properly housed and protected from the sun's heat and heavy rains, as wear and tear will speed up once they are left at the mercy of the environment. Small jeepney drivers and/or operators may not have the luxury of space and only more established or more welloff cooperatives can comply with the DOTr's space requirements, of which there are only a few. The majority has to suffer the huge burden of locating and either renting or buying spaces for their garages.²

² The estimated area needed for 40 jeepney units is about 1,664 square meters (m^2) and 4,160 m^2 for 100 units.

Given the high prices of the modern jeepneys, the designer or planner of the project overlooked or simply avoided the "business" side of investing in the modern jeepneys. It seems that it was not realized that the current jeepney fare (Php 11 per person for the first three kilometers, with Php 1.15 increment for every succeeding kilometer) will not pay back the cost of the modern jeepney (this is discussed in detail in Section 4). Ironically, small jeepney drivers and operators do not want this also to happen as they are concerned with the effect of a fare increase to students, wage workers, and ordinary people. Thus, a modern jeepney–led fare hike produces a domino effect affecting both drivers and operations and the commuting public (this will be discussed later in Section 5.2).

Meanwhile, the capital-scarce small jeepney driver or operator is enticed to join the program through a subsidy to purchase the modern jeepney unit. The government provides a subsidy of Php 80,000 that is raised to about Php 160,000 for equity. The latter amount, however, could not be released because there is no implementing rules and regulations (IRR) yet. Loans are also available from the DBP and LBP at six percent interest rate per annum, to be paid for seven years.

2.2 Durability and longevity of the modern jeepney

The main driving force for modernizing the jeepney is the environmental unsoundness of traditional jeepneys—they are fuel-inefficient, smokebelching, and emit dangerous gases and particulate matter. They are likewise considered as an eyesore due to their dilapidated bodies. However, the first batch of modern jeepneys that were on the roads in 2018 are already starting to belch smoke.

This leads us to question the durability and longevity of these "mini buses." Will they last seven years? Will there be a seven-year warranty from the manufacturers? Who will shoulder the costs of repair and maintenance for the units? *It is very likely that the owners will shoulder such costs.* What are the factors or elements that will affect longevity of the modern jeepney? The manufacturer will assert that the modern jeepneys are durable; but under what conditions? It should be considered that there are rugged roads that make traversing a serious challenge. Additional load carried by commuters should also be taken into consideration. The Euro 4 engine in the modern jeepneys are claimed to be fuel-efficient, mainly because its system is computerdriven. But what will happen to the computer box when the road is bumpy and is "long and winding?" With a heavy passenger load, the driver has to shift gears.

How true are the claims that the Euro 4 engines are untrusted and not durable? Should this be the explanation why Europe quickly manufactured Euro 5 and Euro 6 engines? These engines are claimed to be even "cleaner" than Euro 4 ones. Is it also correct to ask if Euro 4 engines were not tested for longevity under different situations, as there are claims that these are not "battle-tested?" Are we being made a dumping ground yet again of the unmarketable Euro 4 engines? And why is the government prescribing Euro 4 engines if the "cleaner" Euro 5 and Euro 6 engines are already available?

Moreover, based on conditions on the ground, there is no one-sizefits all solution in terms of varied routes and terrains. One example is that for relatively flat roads and short-distance routes like the UP "Ikot" route, the electric jeep would suffice. However, for areas with many uphill roads like Baguio City (where there is also a need to maintain clean air as this is an attraction of the place), liquefied petroleum gas (LPG)-fueled engines would be better than electric ones, as these are yet to be fully developed to tackle uphill terrain. For longer routes in the provinces, diesel-fueled engines could be the best choice because of the distance travelled, the types of road infrastructures in these areas, and the presence of diesel oil stations. There is also less traffic and less stress on diesel-fueled engines in the provinces, hence low emissions can be achieved. The modern "mini buses," big enough to carry more people, could also ply provincial roads as there is less crowding and congestion compared to highly urbanized areas.

2.3 The fleet management scheme as main operational scheme for modern jeepneys

Before small jeepney drivers or operators could avail of the equity subsidy and the bank loans, they should form a cooperative and have it accredited by the Cooperative Development Authority (CDA). They should surrender their individual franchises upon joining the cooperative or when they decide to be consolidated. Franchises shall be surrendered to the consolidator. Joining or forming a cooperative is a prerequisite to fleet management.

The cooperative implementing the fleet management scheme should own forty or more modern jeepney units. In addition, the required lay-over or garage with at least additional 30 percent space of the total should be met by the cooperatives or consolidators. Likewise, drivers of modern jeepneys will have to undergo retraining or reeducation under the Driver's Academy Program of the LTFRB. Where routes are not circular, there must be terminals (or parking areas) at both ends of the route.

The Philippines has a long history of transport cooperativism (see Box 1 on the opposite page) and there are many success stories of transport cooperatives that have expanded in terms of resources and have helped their members. As in all success stories, these cooperatives started small and grew over time, primarily through the fixed deposits of their members and the interrelated profitable enterprises the cooperatives have ventured into. Increase in membership to thousands by word of mouth also helped these cooperatives to eventually succeed. Over the years, leaders of cooperatives had to learn ropes of management and get through the "birth pains" during the earlier days, especially given that they do not receive monetary incentives for their leadership. Their rewards are mostly "thousands of sorrows and griefs."

Cooperative-led fleet management calls for acceleration of learning the three "-wares" of management (i.e., hardware, software, and humanware). The fact that older cooperatives have managed to grow and survive for the last five decades or so means that they are betterequipped to adapt to the changes brought about by the PUVMP. However, it might take years for younger cooperatives to be able to comply to the requirements of the program. Aside from infrastructure and physical requirements, problems such as miscommunication, differences, and disputes among the leaders and members of the cooperative may also affect the transition. This may also build mistrust that can lead to the decline of the cooperative when not settled as soon as possible.

Another criticism hurled at the traditional jeepney are careless drivers with a "bahala na" attitude or with a "kamikaze" style of driving. The modern jeepneys are envisioned to be driven by careful and professional drivers, thus the PUVMP also entails a driver education component, the Driver's Academy. This program, which is being handled by the LTFRB, is a one-day training program for PUV drivers composed of five modules. Module 1 discusses the policies of the LTFRB, while Module 2 delves on road safety. Module 3 tackles road rage and anger management, while Module 4 focuses on traffic signs and road pavements. The fifth module of the program discusses good grooming. The LTFRB, in partnership with educational institutions De La Salle University, Ateneo de Manila University, and the University of the Philippines, began conducting lectures on

BOX 1

A brief history of transport cooperativism

Cooperativism in the transport sector in the Philippines dates back to five decades ago. On October 9, 1973, the late President Ferdinand Marcos met his Cabinet regarding the impending oil price hike and mentioned that transportation and power generation would be hit the hardest. President Marcos instructed a new committee to organize jeepney drivers and operators into transport cooperatives and to "make the jeepney drivers and operators co-owners of the business allow them to own bigger units, extend to them loans, and give them incentives, such as priority in the grant of permits or franchises" (OTC n.d.).

As of January 2021, there are 1,483 transport cooperatives across the country that are accredited by the Office of Transport Cooperatives (OTC), an agency attached to the Department of Transportation (DOTr) (OTC 2021).

August 17, 2017 and has trained about 26,620 participants nationwide (LTFRB n.d.). If tallied based on the 7.5 million new drivers' licenses and permits issued by the LTO in 2018 (Cruz 2019), only 3.5 percent had undergone training under the Driver's Academy. Considering the huge number of drivers to be trained, there should be sufficient infrastructure for the Driver's Academy. But who will finance the Driver's Academy's infrastructure and personnel costs? How much will it cost to initially train 300,000 to 400,000 jeepney drivers?

It will be very expensive to construct a new building, considering land and construction costs. The Driver's Academy may be coordinated and conducted by the Development Academy of the Philippines (DAP) or the Technical Education and Skills Development Authority (TESDA). However, the training program is a privatized endeavor, which means that individual drivers or operators bear the costs of retraining.

Finally, for jeepneys to operate and not contribute to traffic jams, there must be terminals at both ends of their routes (except for circular routes). The drivers' and operators' associations are worried, as they cannot readily identify where to locate these terminals unless the government provides the sites.

3. The numerics of jeepney modernization and target date of completion

There are two numeric aspects of jeepney modernization that must be considered to achieve the target date of the project's completion. These assume that there is no more opposition from the drivers and operators through their associations (i.e., cooperative-led fleet management or private-led consolidation). These are (1) the speed of local assembly of the modern jeepneys and (2) financing for the jeepney units.

3.1 Speed of local assembly

With the importation of completely built-up (CBU) vehicles not allowed anymore, the local assembly of mini buses for the PUVMP is very low and slow. At the current rate of only 1,000 units per year, it will take 70 years before all the traditional jeepneys in Metro Manila will be replaced with modern jeepneys. It will take 270 years before all the traditional jeepneys will be replaced nationwide, even if there is no more opposition from drivers and operators. It will take a proverbial shot in the arm, so to speak, for the current speed to exponentially increase. The LTFRB had accepted that they cannot finish the project's implementation in December 2020. Following the Bayanihan to Recover as One Act (or "Bayanihan 2;" Republic Act No. 11494), it was already announced by the LTFRB that there will be no phaseout of traditional jeepneys. The government previously claimed that it will take three years to finish the project, but it should be noted that it has barely a year left before the end of the current administration ends its term in July 2022.

Granting without accepting, the next administration shall carry on the jeepney modernization project for three years (from 2021 to 2023). To replace the 70,000 traditional jeepneys in Metro Manila alone, the assembly speed should be increased 23 times to build about 23,300 units per year. For all the 300,000 units (including 30,000 unregistered PUJs) nationwide, 100,000 units must be assembled yearly, meaning that the current rate should increase a hundred times.

It is doubtful that the current modern jeepney assemblers (e.g., Isuzu, Toyota, Foton, and local manufacturers Sarao Motors and Francisco Motors, among others) could increase their assembling capacity by a hundredfold. This would entail an expansion of their work areas, procurement of additional machines, and hiring of additional labor. From an investment or business perspective, two points should be considered: (1) the actual demand for assembled units and (2) adequate financing for the units to be assembled. It is uncertain whether the DBP and LBP could provide sufficient funding for this enormous project. There is also a possibility that private investors would come in. Jeepney assemblers will always look at their working capital and cash flows. This leads us to the financial aspect of the program.

3.2 Financing

On equity, small drivers and operators (turned cooperatives) find it too hard to get the Php 80,000 subsidy, which was later raised to Php 160,000. There are stiff requirements for availing the subsidized equity. Furthermore, it is doubtful if there are sufficient funds for the subsidized equity. For Metro Manila alone, about Php 11.68 billion is needed for the 73,000 traditional jeepneys to be replaced. To replace 300,000 units nationwide, the LTFRB will need an additional budget about Php 16 billion annually for three years.

The LTFRB has no additional budget to subsidize the purchase of modern jeepneys in its 2021 budget, as response to the COVID-19 pandemic is the priority in government appropriations.

On the loans to be paid to the manufacturers, the assumption is that all modern jeepneys will be financed through the LBP and the DBP. How much money is involved? The DBP shall provide Php 1.5 billion through their PASADA project (DOTr n.d.a), while the LBP had already approved Php 1.2 billion worth of loans as of December 2020 (LBP 2021). While these amount to nearly Php 2.7 billion, it could only finance around 1,000 units—about 0.3 percent of 300,000 jeepneys nationwide and leaving an enormous 99.7 percent balance.

Two questions arise from this scenario. First, will the DBP and the LBP (assuming a 50-50 share) have sufficient money to fund this enormous project of the government? The answer is no, because even if the burden is shared equally, the two banks have low loanable funds. Or even if they have sufficient funds, they will not use it entirely for a single group or sector. In fact, both banks are financing multiple projects. For instance, aside from its SPEED PUV Loan Program, the LBP is financing many projects such as the Agricultural Credit Support Project (ACSP), Agricultural Competitiveness Enhancement Fund (ACEF), Agricultural and Fisheries Financing Program (AFFP), Young Entrepreneurs from School to Agriculture Program, Go Green Inclusive Financing for SMEs and LGUs Program, and the OFW Reintegration Program, among many others.

Second, will these banks provide loans to new cooperatives that are yet to have a track record in managing huge amounts of loans? Probably not. Moreover, the concept of cooperative-led fleet management is also new to them, which explains why jeepney associations are against it. They are also hesitant to avail such huge loan (40 units \times Php 2,500,000 = Php 100 million), because they are worried if they could pay back their loans, even after the pandemic.

The interest rate (at six percent) and duration of amortization (seven years) are also under question. Private car owners are given a three-percent interest rate for the amortization of their vehicles, and the purpose of availing a loan is for private use or gain. Meanwhile, jeepneys serve the public, so why is the interest rate for modern jeepneys double that of private cars? The high interest rate increased the price of the modern jeepney by 23 percent (compared to 11 percent for private cars). The seven-year amortization period is also too short, which jacks up the payable amount. This compounds on the already expensive base price of the modern jeepney.

The main requirement of the banks in providing credit to small jeepney drivers and operators is for them to organize into cooperatives that are accredited by the CDA and OTC. This is done to lessen their burden of talking to around 400,000 drivers and operators. If each cooperative will have 100 members and 60 percent of the total number of small jeepney drivers and operators will join these cooperatives, the CDA have to organize 800 cooperatives per year within the next three years (400,000 drivers/operators × 60% = 2,400 cooperatives; 2,400 cooperatives \div 3 years = 800 cooperatives per year). One can imagine the costs of organizing a large number of cooperatives and training an even larger number of drivers and operators.

Going back to the costs of the modern jeepney, there are three prices that may considered in calculating the total financing (credit) costs: Php 1.8 million, Php 2 million, and Php 2.5 million. As shown in Table 1 (on the next page), to finance the replacement of 70,000 traditional jeepneys in Metro Manila alone, it will require Php 126 billion to Php 175 billion worth of financing. To replace 300,000 traditional jeepneys nationwide, financing will amount from Php 540 billion to Php 750 billion.

The expensive modern jeepney seems to present an insurmountable problem rather than a solution. A detailed financial analysis of the program in the succeeding section shows this.

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Table 1

	Number of	Price per unit				
Area	replaced	Php 1.8 million	Php 2 million	Php 2.5 million		
Metro Manila	70,000	Php 126 billion	Php 140 billion	Php 175 billion		
Nationwide	300,000	Php 540 billion	Php 600 billion	Php 750 billion		

Estimated financing costs of jeepney modernization

4. Financial analysis of the jeepney modernization program

4.1 Major variables

The simple logic used in the financial analysis of the government's jeepney modernization program involves whether loans for the purchase of units could be repaid in seven years, while ensuring decent income for drivers and operators. In doing the computations, the following major variables are considered:

- (a) *Cooperative- or consolidator-owned units*. Jeepney drivers and operators have to organize into cooperatives. Consolidation initiated by private local assemblers is another option.
- (b) *Interest rates.* A fixed expense, interest rates determine the possible aggregate prices of modern jeepney units after seven years.
- (c) *Base price per unit.* There are two possible scenatrios based on this variable. If the base price of a modern jeepney unit is lower, drivers will not be forced to earn much to pay for its cost. On the other hand, a higher base price might force drivers and operators to increase jeepney fares in order for them to pay the amount within the same schedule.

To calculate loan amortization, formulas and functions in the spreadsheet software Microsoft Excel were used (Kyd n.d.). The PMT function in Excel is used to calculate periodic payment such as loan amortization. The function has the syntax

=PMT(rate, nper, pv)

where *rate* is the periodic rate (from 3 to 10 percent); *nper* is the number of periods (7 years in this case); and pv represents the base price of the modern jeepney (ranging from from Php 1 million to Php 2.5 million). From this function, it could be surmised that the total amount paid after seven years minus the acquisition price is the total amount of interest paid. The amount to be earned per day in order to pay the amortization per month or per year was then computed.

There are two major costs involved: fixed costs (FC) and variable costs (VC). The sum of these is the total cost (TC). The fixed costs include depreciation (after ten years) and fixed amortization (capital + interest). Depreciation is treated as a fixed cost because the machine has many moving parts and suffers from wear and tear that after ten to fifteen years, it is no longer modern or is costlier to repair. Depreciation should not be avoided so the unit could be bought again. The variable costs include two major items: (1) the operational costs of the jeepney and (2) the cooperative-fleet management expenses.

Operational and maintenance expenses include daily fuel consumption (30 liters per day; six days a week; 24 days a month), change oil (every 5,000 kilometers or every three months), change tires (every year or every 30,000 to 40,000 kilometers), body repair and maintenance, airconditioning (cleaning every two years or repair whenever necessary), and wages for drivers and staff of the cooperative. Fluctuating fuel prices can jack up operational costs with constant increase. Aside from the drivers' base salaries (at Php 1,200 per day), social security (SSS) and health insurance (Philhealth) premiums will add to the cooperatives' operational expenses.

Costs of fleet management, on the other hand, consist of salaries and benefits (e.g., social security, health insurance) for personnel of the cooperative, lease for parking and/or office spaces, utilities, and mortgages, among others.

Aside from the drivers' base salaries (at Php 1,200 per day), social security (SSS) and health insurance (Philhealth) premiums will add to the cooperatives' operational expenses.

4.2 Results and discussion

4.2.1 Price

The total amount paid for the modern jeepney is considerably raised by an increase in interest from three to six percent, as shown in Table 2 (on the opposite page). For the base price of Php 2.5 million, at three percent interest, the amount paid after seven years is Php 2.8 million. At six percent interest, the price will increase to Php 3.125 million.

4.2.2 Fares

Using two interest rates (3 percent and 6 percent) that will increase the price of the modern jeepney, adjustments to fares were computed. The detailed computations are shown in Annexes B to I. The fares should be adjusted accordingly so that the costs incurred (fixed and variable costs) could be covered, while providing decent wage to drivers and returns to operators.

As the price of the modern jeepney increases, fares increase as well. Fares increase by Php 1 per Php 200,000 increase in jeepney prices. At low daily passenger ride (200 persons) and if the price of the jeepney is Php 1 million, each passenger should pay a fare of Php 24 (for both interest rates) (see Table 3 on page 26). Interest will affect jeepney fares should the modern jeepney be priced starting at Php 1.8 million. There is also a Php 1 increase in fares when the interest rate is increased from three to six percent. At an optimum daily passenger ridership (300 persons), fares will only be at Php 16. The fare would be pegged at Php 21 and Php 24 if the jeepney is priced at Php 1.8 million and Php 2.5 million, respectively.

4.2.3 Operational and other expenses

Operational expenses for transport cooperatives can be huge due to infrastructure and salaries/wages of staff (as stated earlier, these become major variable costs in cooperative-led fleet management). However, according to one key informant, these expenses are only five percent of total management costs (Php 0.369 million), as compared to variable costs (Php 4.68 million; 66 percent) and fixed costs (Php 2.087 million;

Base price	New prices (in million Php)						
(in million Php)	3% interest	4% interest	5% interest	6% interest			
1.2	1.344	1.404	1.452	1.500			
1.3	1.456	1.521	1.573	1.625			
1.4	1.568	1.638	1.694	1.750			
1.5	1.680	1.755	1.815	1.875			
1.6	1.792	1.872	1.936	2.000			
1.7	1.904	1.989	2.057	2.125			
1.8	2.016	2.106	2.178	2.250			
1.9	2.128	2.223	2.299	2.375			
2.0	2.240	2.340	2.420	2.500			
2.1	2.352	2.457	2.541	2.625			
2.2	2.464	2.574	2.662	2.750			
2.3	2.576	2.691	2.783	2.875			
2.4	2.688	2.808	2.904	3.000			
2.5	2.800	2.925	3.025	3.125			
% increase	12%	17%	21%	25%			

Table 2

Increase in price of modern jeepney units at varying interest rates

26 percent), including amortization and depreciation. The small percentage for such expenses is due to two reasons: officers and staff of cooperatives are only receiving daily wages, and lease of garage or parking and office space is also low. For newer cooperatives, expenses might increase given initial difficulties in fleet management and current costs for infrastructure and equipment.³

³ The actual costs of fleet management for newer cooperatives are yet to be computed.

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Table 3

Fares (first three kilometers) at various modern jeepney prices and number of passengers

Price (in million Php)		1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.5
	At 6% interest								
Daily earning (in Php)	4,825	5,019	5,213	5,406	6,372	6,566	6,760	7,051	
Number	200	24	25	26	27	32	33	34	35
of daily	250	19	20	21	23	25	26	26	28
passengers (+Php	300	16	17	18	19	21	22	23	24
1,000 for	350	14	14	15	15	18	19	19	20
operatory	400	12	13	11	13	16	16	17	18
	At 3% interest								
Daily earnings (in Php)		4,760	4,941	5,122	5,303	6,256	6,437	6,618	6,889
	200	24	25	26	27	31	32	33	34
of daily	250	19	20	20	22	25	26	26	28
passengers (+Php	300	16	16	17	18	21	21	22	23
1,000 for	350	14	14	15	15	18	18	19	20
operator)	400	12	12	10	13	16	16	17	17

Notes:

• Depreciation is included as fixed cost (FC).

• Costs of fleet management were adopted from Pateros–Fort Bonifacio Transport Service and Multipurpose Cooperative (TSMC).

• Computation of fares were based on LTFRB's PUJ General Fare Guide for Mega Manila (effective December 4, 2018)

Cooperatives that had been formed as early as the 1970s had taken advantage of cheaper costs of land; however, they are only few and newer cooperatives will have to contend with higher land prices in order to comply with the garage or terminal space required by the PUVMP. The main reason why small drivers' and operators' associations reject the idea of organizing into cooperatives is because they are required to surrender their individual franchises and their old jeepneys. The cooperatives will own the collective franchises of the units once they have paid the loans. Thus, drivers and operators face two challenging choices. Should they form cooperatives and lose their franchise or remain unconsolidated and not access the loans from the government banks?

The LTFRB claims that a franchise, while a mandatory requirement to operate vehicles for public use, is not a *privilege*. This suggests that it can be withdrawn or cancelled anytime. This aggravates the conflict between the LTFRB and jeepney drivers' and operators' associations and it unites the latter to oppose the government's jeepney modernization program. In previous years, a PUJ franchise lasts for five years. However, the provisionary franchises that were recently given by the LTFRB (in October 2020) originally lasted until December 31, 2020. This was extended to April 15, 2021 in consideration of the COVID-19 pandemic. But who knows what will happen next? It might be logical to claim that this is a *silent kill* or a *legal phaseout* of the iconic jeepneys.

Forming a cooperative and losing individual franchises is also a big risk on the incomes of small drivers and operators. Thus, it is no surprise that they are opposing jeepney modernization and call it "fake" modernization. Moreover, the DOTr or the LTFRB may exercise their power to not issue franchises to individual operators per DO 2017-011.

What are the possible results of this? First, jeepney drivers and operators might conduct a strike and no jeepney will operate on their routes. As the pandemic forced them not to operate, what will happen when the pandemic ends? There might be inadequate jeepneys on the road to transport commuters. Second, jeepney drivers and operators will challenge the legality of the actions of the DOTr and the LTFRB in court.

Ultimately, franchises will be issued to cooperatives, but small jeepney drivers and operators are reluctant to form cooperatives. For

them, reorganization into cooperatives is a "death trap." A stalemate prevails due to the DOTr and LTFRB's insistence that a franchise is not a *privilege* for individual drivers and operators. Annex A describes an actual case where a lone driver/operator had lost his jeepney and the franchise as he joined a cooperative. Briefly, he lost his franchise and sold his jeepney *por kilo* (piecemeal). Worse, he is not being paid the Php 10,000 monthly rebates from the cooperative.

Settling the stalemate might require local government units (LGUs) to take over the ownership of the modern jeepneys. However, some questions arise. Do LGUs have sufficient funds to buy the expensive modern jeepneys and to recover the costs to buy more units, given that jeepneys fare will not increase considerably? Will LGUs be efficient and competent enough to take over the roles of the private sector (i.e., drivers and operators)? How many LGUs have sufficient funds and competency to manage modern jeepney units (say, 150 units × Php 2.5 million = Php 375 million)? Should they be the one to look for funds or negotiate loans to the banks (not only to LBP or DBP)? How long will they be able to sustain subsidized fares?

Changes in amortization, total costs, and fare per passenger were calculated should amortization schedules be extended from seven years to ten or fifteen years. They are summarized below in Table 4 (on next page). An extension of the amortization schedule will cause a slight decrease in amortization payments and to daily earnings needed to cover total costs. There is also a decrease in fares per passenger, albeit only minimal. For 200 passengers, fares would be Php 35, Php 33, and Php 32 for a seven-, ten-, and fifteen-year amortization period (at six percent interest), respectively. For 300 passengers (at same interest), fares would amount to Php 23.50, Php 22.30, and Php 21.30.

The price of the modern jeepney remains as the main determinant for passenger fares. Prolonging the payment from seven to fifteen years will reduce fares by Php 2 only, but it will also increase the total price paid as the accumulated interest will be more than double (from Php 634,862 for a seven-year payment period to Php 1,361,104 for a fifteen-year schedule as summarized in Table 4 on the opposite page).

Table 4

Amortization per month, earnings per day, and fare per passenger as affected by extending years to pay to 7, 10, and 15 years

Years to pay Interest rate		7 years	to pay	10 years	to pay	15 years to pay		
		3%	6%	3%	6%	3%	6%	
Amortizatior month	n per	54,272.16	58,153.13	45,256.3	49,139.15	38,284.70	42,283.90	
Total costs (TC = FC + VC month	C) per	141,341	145,222	132,325	136,208	125,354	129,353	
Earnings per to offset TC	day	5,889	6,051	5,514	5,675	5,223	5,390	
Earnings (+ Php 1,000 for operator*)		6,889	7,051	6,514	6,675	6,223	6,390	
			Fare per	passenger				
	200	34.4	35.3	32.6	33.4	31.1	31.9	
Numbor	250	27.6	27.6	26.1	26.1	24.9	24.9	
of daily	300	23.0	23.5	21.7	22.3	20.7	21.3	
passengers	350	19.7	20.1	18.6	19.1	17.8	18.3	
	400	17.2	17.6	16.3	16.7	15.6	16.0	

* In exchange for surrendering the franchise and the traditional jeepney units

5. General discussion and synthesis: The "blind sides" of jeepney modernization

Jeepney drivers and operators and their associations are not entirely against jeepney modernization, as they support the overarching goal of making jeepneys safe, adequate, comfortable, clean, and environment-friendly. However, as they were not adequately consulted or listened to during the planning and designing of the PUVMP, there are a number of features in which they are not amenable with. First, joining a cooperative or a private consolidator, which entails surrendering their individual franchises, is unacceptable to small drivers and operators. In addition, they will have to surrender their old jeepney units. In this setup, they will just be paid Php 10,000 monthly, which is only a third of what they used to earn if they individually drive their own jeepneys. Their disagreement to this scheme of surrendering their individual franchises has sufficient basis from the experience of some who tested the waters earlier (see Annex A).

Second, the current modern jeepneys are not durable according to drivers and operators. Whether true or not, both sides have not conducted tests to prove the durability and longevity of the modern jeepney. In fact, drivers are claiming that in less than a year, the modern jeepneys will also become smoke belchers. There are also questions whether the body or the Euro 4 engines will last for seven years. This was not included in the financial analysis because of lack of data or coefficient that can be used for the computations.

They were likewise not consulted on route rationalization. As jeepney routes will become redundant or eventually abolished, many drivers will lose their jobs. Furthermore, the width of the modern jeepney could not fit on the roads where traditional ones used to ply.

Based on a study done by the Blacksmith Institute and Clean Air Asia (2017, 3), three options are available for the replacement of technology for PUJs:

- (1) Adopt electric jeepneys initially in short and flat routes in central business districts;
- (2) Adopt Euro 4 diesel jeepneys in routes where electric jeepneys could not initially be adopted; and
- (3) Adopt Euro 4 minibuses and buses in financially viable and operationally feasible situations.

On the first recommendation, jeepney drivers and operators have expressed their concern on driving electric jeepneys during the rainy season, as their components might get soaked especially during floods that typically occur in the streets of Metro Manila. If this recommendation should proceed, specific routes (e.g., the UP Ikot route) must be identified.

Euro 4 engines have an improved catalytic converter that is able to filter out atmospheric contaminants such as sulfur and carbon monoxide more effectively. Given their fuel-efficiency, these engines burn less fuel and thus produce lesser GHG emissions. They also have lesser total hydrocarbon (THC) and nitrogen oxide (NOx) emissions, making them environment-friendly (Pabustan 2017). Whether true or not, jeepney drivers and operators are challenging the durability and longevity of the Euro 4 engines in the modern jeepneys. The expensive price of the engines are another factor in the reluctance to the second recommendation.

While the three options recognize the geographical differences among various jeepney routes, the high prices of the modern jeepneys were not considered. There was also no consideration for the potential impact in passenger fares and for the financial viability of running and managing the jeepney units. A Php 2 increase in fares is definitely insufficient even for the minimum price of the modern jeepney at Php 1 million. It becomes terribly insufficient for the maximum price of Php 2.5 million, which would require the fare to be from Php 24 (300 passengers per day) to Php 35 (200 passengers per day).

The government's National Implementation Plan (NIP) on Environment Improvement in the Transport Sector outlines the plans and actions toward low-carbon and low-pollution transport systems in the Philippines. Chapter 5 ("Future Plans and Programs") of the NIP presents long-term programs and projects for various sectors of transportation that have been in place as early as 2010. Box 2 (on the next page) provides an overview of actions for the road sector.

It goes without saying that the local manufacturing of engines and vehicle parts is not included in the NIP. This is related to the high peso costs involved in implementing the programs under the NIP if these components will just be imported from abroad and assembled in the country.

Based on insights from jeepney drivers and operators and on collected data, the government's jeepney modernization project has

BOX 2

Outline of actions for the road sector in the National Implementation Plan (NIP) on Environment Improvement in the Transport Sector

Road transport is identified as the most common mode of transport both in terms of passenger and cargo traffic (as compared to rail, water, and air transport). It is therefore unsurprising that the NIP noted the sector "to have seriously caused the environmental damages particularly in urban areas in the Philippines" (DOTr n.d., 31).

Section 5.1.1 of the NIP lists down the future actions required to address environmental concerns brought about by road transport. These are listed below:

	Pillar of measures	Outline
1	Emission control, standards, inspection and maintenance (I/M)	 Establishment of Motor Vehicle Inspection System Improvement of vehicle inspection and maintenance system Regulation of secondhand vehicles Introduction of Jeepney standard Introduction of new or revised emission standards (e.g., Euro 4, fuel economy, noise)
2	Vehicle technology	 Operation of fuel efficient vehicles Operation of vehicles using alternative fuel Conversion of tricycles to electric tricycles Operation of CNG, electric, and hybrid buses
3	Public transportation	 Operation of Bus Rapid Transit (BRT) Promotion of MRT, LRT, BRT
		 Enhance ferry services Multi-modal service in nautical highways Development of PNR commuter and inter-regional services
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4	Travel demand management	 Truck ban on certain periods of the day Introduction of pedestrian-only streets Promotion of staggered work and school hours Development of sub-urban cities Vehicle ownership policy
5	Non-motorized transport (NMT)	 Promotion of bikeway and installation of bike lanes Promotion of vehicle traffic utilization reduction campaign (e.g., car-free day, mobility week)
6	Freight and logistics	 Improvement of freight transportation complex, truck terminals, and physical distribution centers
7	Cleaner fuel	 Alternative fuel introduction (CNG, LPG, etc.) in the national development plan
8	Biofuel	 Alternative fuel introduction (biofuel, etc.) in the national development plan
9	Behavioral changes	Promotion of eco-safe driving
10	Environmental monitoring	 Introduction of environmental monitoring systems (e.g., noise, particulate matter (PM))
11	Inventory	• Development of local data in estimating emissions (e.g., vehicle emission factors, registrations)

12	Infrastructure	 Expansion/completion of missing road network (ring road, bypass) and bridges Restoration of signalized (vehicle actuated traffic signal system) intersections in Metro Manila Grade separation at main interchanges Establishment of integrated and multi-modal terminals
13	Institutional/legislative measures	 Operationalization of People Survival Fund (PSP) for climate change adaptation Operationalization of laws that legislate tax subsidies for electric vehicle development, manufacturing, and importation

two main "blind sides:" the high price per unit of the modern jeepney and the domino effect of a possible jeepney fare hike to cover the cost of purchasing modern jeepney units.

5.1 High unit price of the modern jeepney

The main blind side of the jeepney modernization program is the *high price per unit of the modern jeepney* as described in Figure 1 (on the opposite page). The high unit price in peso is attributed to being imported in dollars and the high peso-to-dollar exchange rate (Php 1 = USD 0.021 as of March 29, 2021). In 2017, the price of modern jeepney units ranged from Php 1.4 million to Php 1.6 million per unit. By 2020, the price zoomed up to Php 2.5 million. High unit prices means high yearly payments, which will be compounded by high interest. Annual amortization costs increase by 25 percent at six percent

interest (see Table 2 in Section 4.2). If the base price of the jeepney is Php 2.5 million, the total amount to be paid increases to about Php 3.125 million (an increase of about Php 625,000 or 28.6 percent) after seven years.

Amortizations *per year* and *per day* increase as the base price of the modern jeepney increases. The daily amortization scheme is being implemented by cooperatives, so that payments will not accumulate on the end of the drivers.

But because amortization costs already included depreciation, will the modern jeepneys last for the assumed life span of ten years? What will be the resale value of the jeepney units after ten years? Depreciation alone increased amortization costs by Php 100,000 per year. The additional features of the modern jeepney (e.g., WiFi, CCTV, air conditioner) and its Euro 4 engine likewise contribute to the high maintenance costs of modern jeepneys (variable costs/ VC). The fuel injection pump alone costs Php 150,000. There is no data on when modern jeepneys will need recalibration or if it will be totally replaced once it malfunctions. Parts of the modern jeepney

Figure 1

The interrelated effects of the high price of the modern jeepney



should be made locally available, because it will take a while to replace malfunctioning parts if these will be purchased abroad. All the while, the amortization is still in place while the jeepney is stalled and the drivers and operators are not earning.

Adding the fixed costs (FC) and variable costs (VC) translates to high earnings needed by the driver or operator per day to cover the total costs of the jeepney. For example, if the price of the jeepney is Php 1.4 million, one would need to earn Php 5,112 per day; for the maximum unit price of Php 2.5 million, Php 6,899 daily earnings will be required to offset the total costs. The calculated daily earnings still assumes that operation will not be stalled or the jeepney will not break down. This might be true during the first few years, but there is no assurance of durability and longevity in the succeeding years.

High prices are usually equated to high quality; conversely, high quality demands high prices. The scaled-up price of the modern jeepney can be attributed to this principle, especially coming from the perspective of manufacturers and assemblers. One cannot get something out of nothing, thus one has to pay for quality. Small drivers and operators, on the other hand, could not readily afford to pay the higher prices for the sake of quality. Their main complaint, however, stems from the large increase in prices in modern jeepney units since the first year of the implementation of the PUVMP, which amounts to about Php 1.1 million per unit.

This leads to an offshoot of the first blind side of jeepney modernization: the high earnings per day needed to pay for the high total costs of the modern jeepney. For example, as previously shown in Table 3, if jeepneys will only have 200 passengers per day, jeepney fares could go up as high as Php 26 (to pay for the Php 1.4-million jeepney) to Php 34 (to pay for the Php 2.5-million jeepney).

Two main variables account for this function: the price of the modern jeepney and the number of passengers per day. As the price of the modern jeepney increases, passenger fares also increase (for the same number of passengers). Similarly, as the number of daily passengers increases, fares should decrease. Should the current COVID-19 pandemic stop and physical distancing will no longer be required in public transport, most drivers and operators would still find it difficult to reach the more optimal number of passengers (400 passengers per day), except for those that will travel up to 30 kilometers (gaining about 440 passengers). The interrelation of the price of the modern jeepneys and the pressure to find passengers in order to earn more for the amortization of the jeepney units leads us to another major blindside of jeepney modernization: high jeepney fares.

5.2 The domino effect of high jeepney fares

The proponents of jeepney modernization refuse to acknowledge the simple truth that *high-priced modern jeepneys will lead to high jeepney fares*. They probably know it, but they are not revealing this fact to the public. The reason is that they want to please the riders who outnumber the drivers and operators. *The riders want to have a piece of cake and eat it too.* In other words, they want *comfort without pay*, which is unfair to jeepney drivers and operators. This is one of the reasons behind this study.

In reality, jeepney drivers and operators also do not want fare increases. One driver said, "kawawa naman ang tao, lalo silang mahihirapan" (It's a pity for the people, it will be more difficult for them [should fares increase]). What they are not saying is that their earnings will also suffer, as people might just choose to walk or ride their bikes if jeepney fares increase. The refusal of the DOTr to acknowledge this harsh reality had backfired. As discussed earlier, for about three years, jeepney modernization has moved at a snail's pace. There are only about 4,000 or less modern jeepneys on the roads. The assembly and/or manufacturing of modern jeepney units is also low at about 1,000 units per year.

The demand for modern jeepneys is big, at nearly 300,000 units. However, considering this demand and the actual number of "take-out" or "orders for delivery" by the end users (i.e., drivers and operators), the assembly/manufacturing and deployment of the modern jeepneys is actually low. A number of reasons could be attributed to this situation:

- Jeepney drivers and operators could hardly afford even the Php 160,000 equity. What more the total take-out price of one unit at Php 2.5 million?
- The government tasked the LBP and the DBP will finance the jeepney modernization program. However, the amount of loans released so far by both banks (around Php 2.5 billion) is only 0.3 percent of the total amount needed for the entire project. Ordinary jeepney operators and drivers are having difficulties in accessing the loans because of the amount of requirements, including being under a cooperative. They are reluctant to form or join cooperatives because they will have to surrender their individual franchises, which are their lifeline. They also disapprove against private consolidation, as their monthly rebates will only be Php 10,000, a third of what they earn if they have individual franchises or about half in the boundary system.
- Route rationalization, to be initiated by LGUs, is yet to be done. The LGUs will not do it until the 2022 elections, as they are considering its impacts to the voting public.

The LBP and the DBP are government-owned and controlled corporations (GOCCs), meaning that they have to abide to and support government programs and projects. As previously mentioned, for the PUVMP, the LBP has the SPEED Program, while the DBP has the PASADA Program. Even if these are GOCCs, both banks have private depositors as well, so they have to keep their money secure. Therefore, these banks will not just simply lend money to clients (including jeepney drivers and operators) without definite assurance that the loans will be repaid. The DBP had made their own calculation and it goes without saying that current jeepney fares will not allow drivers and operators (through their cooperatives) to fully repay the loans (even after the pandemic). Meanwhile, assemblers and manufacturers could not go on full production as they are also careful on costs. Unsold units will mean a stop in their cash flow, hence their logical option is a wait-and-see strategy for effective demand. Nonetheless, assemblers and manufacturers fully support the government's PUV modernization program for the simple reason that it presents a big business opportunity for them.

The difficulties in accessing financing for the already expensive modern jeepneys and the tight amortization schedule leads to the possibility of increasing passenger fares. In turn, this could produce a domino effect.

An increase in passenger fares means higher costs of living, as it will translate to higher transport costs of food and other goods from farms, fisheries, or factories to consumers. Higher fares will also mean higher transport costs per family or household. For example, a family with one worker and two children going to school would spend Php 26 per ride if the standard fare is Php 10 and the discounted fare is Php 8. If the jeepney fares will be increased to Php 30 and Php 24, respectively, they will spend Php 78 per ride. A Php 52 increase in fares, when accumulated, could already become useful for other needs.

The effects of a fare hike to food prices is more difficult to estimate as transport is only one of the costs in food logistics. But with a threefold increase in transport costs due to fare hikes, it will become a major cost in the value chain.

In effect, higher transport costs will mean a higher cost of living. A consequence of this is that daily wage earners will demand higher wages, as increased fares will eat up about 15 percent of their daily wage from the current five percent (a ten-percent increase), notwithstanding the increase in the prices of food and other commodities. Rank-and-file employees of private industries will also be affected by the fare increase. Should their salaries be increased, this will negatively affect the profitability of their employers. For economists, wage increases are signs of business instability. As business is the engine of livelihood, its instability will affect societal peace and order.

Both the government and jeepney drivers and operators are averse to fare hikes, but it is ironic that both are also in favor of jeepney modernization. With the high cost of the modern jeepney and its

Figure 2



The domino effect of jeepney fare hike due to high modern jeepney prices

possible repercussions becoming apparent, are we made to "bite the bullet?" This leads to the following synthesis.

5.3 Synthesis

What do we want? It is safe to say that we all want improvement and progress and that we all want safe, clean, environment-friendly, dependable, and adequate public transport.

On the other hand, we do not want to put all the blame for traffic jams and environmental problems to the iconic traditional jeepney. Jeepney drivers who are unfriendly, careless, and impolite can be remedied through ordinances prohibiting and penalizing such behavior, cancellation of their driver's licenses, or reinforcement through the current driver's education program of the government. Similarly, it is unfair to attribute GHG emissions and air pollution solely to jeepneys, as they are only a fraction of the millions of vehicles plying the roads of Metro Manila. These were the pretexts to the haphazardly planned and implemented jeepney modernization program, which small drivers and operators call as "fake modernization."

Another option available is to let the traditional jeepney "die a natural death." However, this should be done by improving the country's public transport system. The improvement and development of railway networks and river ferry systems will provide commuters with more options for mobility. The government should likewise avoid the *ningas-kugon* tendency for transportation and infrastructure projects.

The government should also promote non-motorized mobility, including walking and biking. Aside from being healthy and environment-friendly options, these are relatively cheaper modes of mobility. Incentivizing non-motorized mobility could help in its promotion. For example, monetary incentives can be based on fares that will saved from riding traditional jeepneys or on the amount of aborted carbon footprint.

6. Addressing the blind sides: Strategic options for achieving jeepney modernization

The government's jeepney modernization program has three main goals: (1) improve safety of passengers and drivers; (2) make jeepneys more environment-friendly; and (3) provide a comfortable riding experience for passengers.

Achieving these goals requires a considerable amount of resources (e.g., funding and infrastructure) and suitable management (e.g., cooperative-led or private-led fleet management). Taken altogether, it will take some time to plan and implement a project of this scale. The jeepney modernization program was started in 2017 and was originally scheduled to last until 2020. However, it is apparent that this schedule was not met. Even without a pandemic or if the drivers' and operators' associations have not expressed opposition, the program could not be achieved with the rate that it is progressing. The main constraint is the slow assembly of modern jeepneys at 1,000 units per year. For three years, it would require the assembly of 24,300 units to replace the 73,000 traditional jeepneys in Metro Manila alone. While the pandemic has considerably reduced air pollution and improved air quality in Metro Manila, the anticipated return of buses, jeepneys, and other vehicles after (or even during) the pandemic will still see high usage of fossil fuels, traffic congestion, and the return of health and environmental hazards due to GHG emissions

What can be done then? The recommendations and actions are divided into short-term (to be done within one to ten years)—which also marks the transition stage—and long-term ones (to be done from eleven to twenty-five or more years).

6.1 The transition stage

For the short-term or transition stage, the following recommendations are presented:

 Allow the overhaul or re-manufacture of older engines in order to considerably reduce emissions and pass the emission standards. Also, the dilapidated bodies of existing jeepneys can be modified or redesigned to approximate the PNS for modern jeepneys.

For vehicle registration purposes, the installation of the safety features of the modern jeepneys should be met for older units. Likewise, the age restrictions for older jeepneys must *not* be imposed if they pass the emission standars after overhauling or engine reinstallation.

Moreover, there are many privately-owned emission testing centers. Their emission test equipment must be calibrated with the reference machines, stamped, and be regularly monitored and evaluated. Because of competition, all vehicles that are subjected to emission testing readily pass the emission standards. The reason is obvious as these centers will lose many clients if only few pass the emission tests. Thus, to invite more clients, all vehicles pass the emission tests. If emission test equipment are calibrated, it will remove 30 to 40 percent of vehicles from the roads.

(2) Encourage the local fabrication of modern jeepneys, rather than relying on foreign companies. Local fabrication should follow the PNS for modern jeepneys and emission standards in accordance with the Clean Air Act. The local fabrication of original parts must also be allowed or encouraged. (3) Relax the engine type prescriptions (Euro 4) for jeepneys, provided that emission standards (per the Clean Air Act) are met. As questions on the durability and longevity of Euro 4 engine systems are being raised, its prescription as the engine required for modern jeepneys is likewise being questioned. This section of the DOTr's Omnibus Guidelines which prescribes Euro 4 engines is being questioned for its quasi-legal nature, hence it could not be made mandatory as the freedom of choice of citizens is deprived. This makes the portion of the guidelines unconstitutional.

6.2 Medium- to long-term: "Localized modernization"

Our claim is that *no country in the world is fully modernizing their vehicles through importation.* In Myanmar, people have outrightly asserted that they cannot afford brand new imported modern vehicles. Just like the Philippines, Myanmar relies on imported vehicles and does not manufacture them. Hence, for the medium- to long-term, the recommendation is what called "localized modernization." As calculated earlier, an import-based full modernization of public transport is very expensive. In another calculation by Senator Grace Poe, it will cost Php 420 billion. The preliminary calculation in this paper is greater than that of Sen. Poe as the former included 12.75 million vehicles (e.g., buses, mini buses, mini trucks, cars, tricycles, and motorbikes). Our calculations showed that the total value is greater than our gross domestic product of Php 17 trillion in 2018.

That traditional jeepneys allegedly contribute 15 percent of transport emissions or about three percent of the country's total GHG emissions is neither an adequate reason for jeepney modernization nor a precise assertion. First, the 15-percent emission contribution is not precise as the emissions of buses, trucks, cars, vans, and other vehicles were not included in the calculations. Embedded or fabrication emissions comprise 15 to 20 percent of the total emission of cars and buses (total emission = fabrication emission + operation emission).

In the short- to medium-term, we can locally produce rubber tires (which, however, will require manufacturing capacity) and vehicle parts that do not involve "rocket science" or complicated mechanisms.

Localized modernization will generate more jobs, avoid dollar outflows due to importation, increase the value of our products (particularly rubber), generate higher incomes for our rubber growers, and provide higher revenues for local providers and makers of vehicle parts and accessories.

In closing, localized PUV modernization should be viewed as a component of the country's overall sustainable and inclusive economic development framework. We could take inspiration from the nationalist industrialization paradigm which the late nationalist economist Alejandro Lichauco had advocated four decades ago.

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Annex A The case of Alan Gonzalo

Alan T. Gonzalo, 51, is the president of the Tulay Fort Bonifacio Jeepney Operators and Drivers Association (TUBOJODA). He hails from Kitcharao, Agusan del Norte and is a seafarer by training. In fact, he has worked for more than four years as a seaman in a fishing boat. In 1991, he went to Manila to apply for an overseas job, leaving his wife and three children. While processing his papers, he drives a jeepney on a boundary arrangement for his subsistence and to be able to send money to his family. Due to the additional expensive "schooling" that he needed to take for an overseas job, he lost interest in seeking employment abroad and he just concentrated on driving the jeepney. After a year, he was motivated to run as officer of their association, initially winning as public relations officer (PRO). Their secretary did not report regularly, so he took over the duties of writing reports and other secretarial tasks. Alan became popular to the members of association and was eventually elected president in 2008. The association's bylaws specify a three-year term for its officers, but do not set any limits on reelection, "basta hangga't gusto ka ng tao" (as long as the people like you as their officer). Alan always gets reelected in his position and 2020 marked his 13th year as president of the TUBOJODA.

A Mindanaoan and being the president of their association, Alan fully supported the administration of President Rodrigo Duterte. When the government called for jeepney modernization, he automatically gave his full support to the program. As he was fully convinced of the plan, he followed the first step of joining a transport cooperative. He joined the Pateros–Fort Bonifacio Transport Service and Multipurpose Cooperative, where he was elected as auditor. Twentyeight out of the 128 members of the TUBOJODA also joined the cooperative.

As stated in the DO 2017-011 or the Omnibus Guidelines of the DOTr, joining a cooperative is a prerequisite for availing government support to purchase units of the modern jeepney. Likewise, drivers and operators are to surrender their individual franchises together

with their old jeepney units. Instead of surrendering his old jeepney, Alan sold it piecemeal to willing buyers and gave the engine to his cousin.

To compensate for lost income, the cooperative shall pay drivers Php 15,000 per month, which was later reduced to Php 10,000. When Alan was driving his own jeepney, he was earning around Php 1,200 per day after deducting all of his expenses (see Table A1 on the opposite page). He was earning more than Php 30,000 monthly. Joining the jeepney modernization program, which led him to surrender his franchise and lose his jeepney, has caused a great reduction in his daily income from about Php 1,081 per day to merely Php 350 per day or Php 10,000 per month. His income might have been reduced, but he does not need to drive and maintain an old jeepney and experience the hassle of driving everyday in the polluted, crowded, and humid roads of Manila. I asked Alan if they have a memorandum of agreement (MOA) detailing their terms and conditions on the franchise under the cooperative and on his old jeepney. His answer was "saka na raw po" (they'll discuss it later). In reality, there was none to begin with. This raises a concern on how to make cooperatives accountable to their member drivers and operators who heeded the call of jeepney modernization in the absence of a MOA.

With the outbreak of the COVID-19 pandemic and the increasing number of cases in the country, the movement of people became limited as the President placed the country under community quarantine. During the imposition of the strict enhanced community quarantine (ECQ) in Metro Manila in March 2020, the cooperative stopped giving its members their monthly payment, which the latter understood. As jeepneys started to operate again in July 2020, members of the cooperative expected to receive even only half of their pre-pandemic monthly payments.

Ernesto Oler recently ran for association president and he campaigned hard by offering "drinks" to fellow drivers. However, he still lost to Alan, the incumbent president who did not even campaign to win the votes of the cooperative members. While serving as President, Alan was also selected as auditor of their cooperative. As

Table A1

Alan Gonzalo's earnings and expenses (in Php) in driving the traditional jeepney

Base price		120,000
Fixed costs (FC)	Per year	Per month
Depreciation	(120,000 (5 years))	2,000
Loan amortization		2,667
Registration/insurance	5,889	667
Franchise	7,000 (5 years)	117
FC per month		5,450
FC per day		227
Variable costs (VC)	Per year	Per month
Jeepney operation/maintenance		
Daily diesel oil consumption (20 liters/day × 24 days/month)		14,880
Change oil (every 3 months)		500
Change tires (4 tires + interior + flap; every 6 months)		4,000
Regular maintenance and repairs		1,092
Starter	3,600	
Alternator	4,000	
Clutch	3,500	
Welding	2,000	167
Overhaul	30,000 (2 years)	1,250
Change battery	6,000	500
Parking costs		210
VC per month		22,598
VC per day		942
Total costs (TC = FC + VC) (also monthly earnings needed)		28,049
Daily earnings needed to offset TC		1,169
Actual daily earnings (Php 750/round trip (Gate 3–Guadalupe route) × 3 round trips)		(2,250)
Net daily earnings		1,081

auditor, his duty is to conduct financial audits for the cooperative. There was an instance that he and two others went to the cooperative's office to conduct audit. However, they were not allowed to see the cooperative's records. The reason given was that Alan did not inform Mr. Oler, the chair of the cooperative, that he will conduct an audit that day, thus Mr. Oler was not in the office. Alan reasoned out that as auditor, he can do the audit even when the chair is not around.

Because of Alan's attempts to conduct an audit of the cooperative, which were repeatedly blocked, he was discharged not only as auditor, but also as a member of the cooperative. He already filed a complaint to the Cooperative Development Authority (CDA) regarding his case and of his companions from their old association.

To summarize, Alan lost his jeepney and franchise, and much later, his membership in the cooperative. He and his 28 companions are no longer receiving their Php 10,000 monthly rebates. Even in the middle of the pandemic, many of the traditional jeepneys are allowed again to operate again. But even if he wants to, Alan has no more jeepney to drive. Neither was he offered to drive any of the 29 modern jeepneys their cooperative operates. There are still many drivers looking for a jeepney to drive under the boundary system, thus if he decides to drive a traditional jeepney again, he will displace an existing driver. As the president of their association, he does not want to do such thing. In short, he is now jobless.

The other members that Alan convinced into joining the cooperative (who also surrendered their old jeepneys) were applying to drive the modern jeepney, but they were required to submit a drug test certification. Given the current situation, they had difficulties in obtaining a drug test. As a result, they were not hired as drivers even for the traditional jeepneys, of which the cooperative owns 48 units.

The case of Alan Gonzalo is included in this paper as it could provide lessons to other drivers and operators regarding jeepney modernization. First, a MOA should have been prepared and signed before the surrender of individual franchises and old jeepney units to the cooperative. And second, officers of transport cooperatives should have been trained (or retrained) on their duties and responsibilities in the cooperative and on the fleet management of modern jeepneys.

Annex B

Estimates of fixed costs (FC), variable costs (VC), and fare per passenger at Php 1 million modern jeepney base price and at varying interest rates

AMORTIZATION								
Base price			Yearly amorti	zation at vary	ing interest n	ates (in Php)		
Php 1,000,000/unit	3%	4%	5%	%9	7%	8%	%6	10%
Year 1	160,506	166,610	172,820	179,135	185,553	192,072	198,691	205,405
Year 2	160,506	166,610	172,820	179,135	185,553	192,072	198,691	205,405
Year 3	160,506	166,610	172,820	179,135	185,553	192,072	198,691	205,405
Year 4	160,506	166,610	172,820	179,135	185,553	192,072	198,691	205,405
Year 5	160,506	166,610	172,820	179,135	185,553	192,072	198,691	205,405
Year 6	160,506	166,610	172,820	179,135	185,553	192,072	198,691	205,405
Year 7	160,506	166,610	172,820	179,135	185,553	192,072	198,691	205,405
Total price	1,123,544	1,166,267	1,209,739	1,253,945	1,298,873	1,344,507	1,390,834	1,437,838
Base price	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Accumulated interest	123,544	166,267	209,739	253,945	298,873	344,507	390,834	437,838
Average interest per year	17,649	23,752	29,963	36,278	42,696	49,215	55,833	62,548
FIXED COSTS (FC)								
Depreciation (Php 1,000,000 ÷ 10 years)	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
Annual amortization	160,506	166,610	172,820	179,135	185,553	192,072	198,691	205,405
Total FC per year	260,506	266,610	272,820	279,135	285,553	292,072	298,691	305,405
Total FC per month	21,709	22,217	22,735	23,261	23,796	24,339	24,891	25,450
Total FC per day	905	926	947	696	992	1,014	1,037	1,060

VARIABLE COSTS (VC)								
Jeepney operation/maintenance costs (per month)				62,	420			
Daily fuel consumption (30 liters/day)				22,	320			
Change oil (every 5,000 kilometers or every 3 months)				99	00			
Change tires (yearly or every 30,000 to 400,000 kilometers)				2,5	333			
Preventive regular maintenance/repairs				1	37			
Cleaning/repair of aircon (every 2 years)				1,0	00(
Wages for driver (Php 1,200/day)				36,	000			
Cooperative-led fleet management costs (per month)*				6,3	116			
Total VC per month				68,	536			
TOTAL COSTS (FC + VC) (per month)	90,244	90,753	91,271	91,797	92,332	92,875	93,426	93,986
EARNINGS								
Earnings needed per month to offset TC	90,244	90,753	91,271	91,797	92,332	92,875	93,426	93,986
Earnings needed per day to offset TC	3,760	3,781	3,803	3,825	3,847	3,870	3,893	3,916
Daily earnings + payment for operator (Php 1,000)	4,760	4,781	4,803	4,825	4,847	4,870	4,893	4,916
FARES								
Number of passengers								
200	24	24	24	24	24	24	24	25
250	19	19	19	19	19	19	20	20
300	16	16	16	16	16	16	16	16
350	14	14	14	14	14	14	14	14
400	11.9	12.0	12.0	12.1	12.1	12.2	12.2	12.3

Annex C

Estimates of fixed costs (FC), variable costs (VC), and fare per passenger at Php 1.2 million modern jeepney base price and at varying interest rates

AMORTIZATION								
Base price			Yearly amorti	zation at vary	ing interest ra	ates (in Php)		
Php 1,200,000/unit	3%	4%	5%	%9	7%	8%	%6	10%
Year 1	192,608	199,932	207,384	214,962	222,664	230,487	238,429	246,487
Year 2	192,608	199,932	207,384	214,962	222,664	230,487	238,429	246,487
Year 3	192,608	199,932	207,384	214,962	222,664	230,487	238,429	246,487
Year 4	192,608	199,932	207,384	214,962	222,664	230,487	238,429	246,487
Year 5	192,608	199,932	207,384	214,962	222,664	230,487	238,429	246,487
Year 6	192,608	199,932	207,384	214,962	222,664	230,487	238,429	246,487
Year 7	192,608	199,932	207,384	214,962	222,664	230,487	238,429	246,487
Total price	1,348,253	1,399,521	1,451,686	1,504,734	1,558,647	1,613,408	1,669,000	1,725,406
Base price	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000
Accumulated interest	148,253	199,521	251,686	304,734	358,647	413,408	469,000	525,406
Average interest per year	21,179	28,503	35,955	43,533	51,235	59,058	67,000	75,058
FIXED COSTS (FC)								
Depreciation (Php 1,200,000 ÷ 10 years)	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000
Annual amortization	192,608	199,932	207,384	214,962	222,664	230,487	238,429	246,487
Total FC per year	312,608	319,932	327,384	334,962	342,664	350,487	358,429	366,487
Total FC per month	26,051	26,661	27,282	27,914	28,555	29,207	29,869	30,541
Total FC per day	1,085	1,111	1,137	1,163	1,190	1,217	1,245	1,273

VARIABLE COSTS (VC)								
Jeepney operation/maintenance costs (per month)				62,4	120			
Daily fuel consumption (30 liters/day)				22,3	320			
Change oil (every 5,000 kilometers or every 3 months)				60	0			
Change tires (yearly or every 30,000 to 400,000 kilometers)				2,3	33			
Preventive regular maintenance/repairs				16	1			
Cleaning/repair of aircon (every 2 years)				1,0	00			
Wages for driver (Php 1,200/day)				36,0	000			
Cooperative-led fleet management costs (per month)*				6,1	16			
Total VC per month				68,5	536			
TOTAL COSTS (FC + VC) (per month)	94,586	95,196	95,818	96,449	97,091	97,743	98,405	99,076
EARNINGS								
Earnings needed per month to offset TC	94,586	95,196	95,818	96,449	97,091	97,743	98,405	99,076
Earnings needed per day to offset TC	3,941	3,967	3,992	4,019	4,045	4,073	4,100	4,128
Daily earnings + payment for operator (Php 1,000)	4,941	4,967	4,992	5,019	5,045	5,073	5,100	5,128
FARES								
Number of passengers								
200	24.71	24.83	24.96	25.09	25.23	25.36	25.50	25.64
250	19.76	19.87	19.97	20.07	20.18	20.29	20.40	20.51
300	16.47	16.56	16.64	16.73	16.82	16.91	17.00	17.09
350	14.12	14.19	14.26	14.34	14.42	14.49	14.57	14.65
400	12.35	12.42	12.48	12.55	12.61	12.68	12.75	12.82

Annex D

Estimates of fixed costs (FC), variable costs (VC), and fare per passenger at Php 1.4 million modern jeepney base price and at varying interest rates

AMORTIZATION								
Base price			Yearly amorti	zation at vary	ing interest ra	ates (in Php)		
Php 1,400,000/unit	3%	4%	5%	%9	7%	8%	%6	10%
Year 1	224,709	233,253	241,948	250,789	259,775	268,901	278,167	287,568
Year 2	224,709	233,253	241,948	250,789	259,775	268,901	278,167	287,568
Year 3	224,709	233,253	241,948	250,789	259,775	268,901	278,167	287,568
Year 4	224,709	233,253	241,948	250,789	259,775	268,901	278,167	287,568
Year 5	224,709	233,253	241,948	250,789	259,775	268,901	278,167	287,568
Year 6	224,709	233,253	241,948	250,789	259,775	268,901	278,167	287,568
Year 7	224,709	233,253	241,948	250,789	259,775	268,901	278,167	287,568
Total price	1,572,962	1,632,774	1,693,634	1,755,523	1,818,422	1,882,310	1,947,167	2,012,974
Base price	1,400,000	1,400,000	1,400,000	1,400,000	1,400,000	1,400,000	1,400,000	1,400,000
Accumulated interest	172,962	232,774	293,634	355,523	418,422	482,310	547,167	612,974
Average interest per year	24,709	33,253	41,948	50,789	59,775	68,901	78,167	87,568
FIXED COSTS (FC)								
Depreciation (Php 1,400,000 ÷ 10 years)	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000
Annual amortization	224,709	233,253	241,948	250,789	259,775	268,901	278,167	287,568
Total FC per year	364,709	373,253	381,948	390,789	399,775	408,901	418,167	427,568
Total FC per month	30,392	31,104	31,829	32,566	33,315	34,075	34,847	35,631
Total FC per day	1,266	1,296	1,326	1,357	1,388	1,420	1,452	1,485

VARIABLE COSTS (VC)								
Jeepney operation/maintenance costs (per month)				62,4	420			
Daily fuel consumption (30 liters/day)				22,3	320			
Change oil (every 5,000 kilometers or every 3 months)				90	0			
Change tires (yearly or every 30,000 to 400,000 kilometers)				2,3	33			
Preventive regular maintenance/repairs				16	1			
Cleaning/repair of aircon (every 2 years)				1,0	00			
Wages for driver (Php 1,200/day)				36,(000			
Cooperative-led fleet management costs (per month)*				6,1	16			
Total VC per month				68,	536			
TOTAL COSTS (FC + VC) (per month)	98,928	99,640	100,365	101,101	101,850	102,611	103,383	104,166
EARNINGS								
Earnings needed per month to offset TC	98,928	99,640	100,365	101,101	101,850	102,611	103,383	104,166
Earnings needed per day to offset TC	4,122	4,152	4,182	4,213	4,244	4,275	4,308	4,340
Daily earnings + payment for operator (Php 1,000)	5,122	5,152	5,182	5,213	5,244	5,275	5,308	5,340
FARES								
Number of passengers								
200	25.61	25.76	25.91	26.06	26.22	26.38	26.54	26.70
250	20.49	20.61	20.73	20.85	20.98	21.10	21.23	21.36
300	17.07	17.17	17.27	17.38	17.48	17.58	17.69	17.80
350	14.63	14.72	14.81	14.89	14.98	15.07	15.16	15.26
400	10.30	10.38	10.45	10.53	10.61	10.69	10.77	10.85

Annex E

Estimates of fixed costs (FC), variable costs (VC), and fare per passenger at Php 1.6 million modern jeepney base price and at varying interest rates

AMORTIZATION								
Base price			Yearly amorti	zation at vary	ing interest ra	ates (in Php)		
Php 1,600,000/unit	3%	4%	5%	%9	7%	8%	%6	10%
Year 1	256,810	266,575	276,512	286,616	296,885	307,316	317,905	328,649
Year 2	256,810	266,575	276,512	286,616	296,885	307,316	317,905	328,649
Year 3	256,810	266,575	276,512	286,616	296,885	307,316	317,905	328,649
Year 4	256,810	266,575	276,512	286,616	296,885	307,316	317,905	328,649
Year 5	256,810	266,575	276,512	286,616	296,885	307,316	317,905	328,649
Year 6	256,810	266,575	276,512	286,616	296,885	307,316	317,905	328,649
Year 7	256,810	266,575	276,512	286,616	296,885	307,316	317,905	328,649
Total price	1,797,671	1,866,028	1,935,582	2,006,312	2,078,196	2,151,211	2,225,334	2,300,542
Base price	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000
Accumulated interest	197,671	266,028	335,582	406,312	478,196	551,211	625,334	700,542
Average interest per year	28,239	38,004	47,940	58,045	68,314	78,744	89,333	100,077
FIXED COSTS (FC)								
Depreciation (Php 1,600,000 ÷ 10 years)	160,000	160,000	160,000	160,000	160,000	160,000	160,000	160,000
Annual amortization	256,810	266,575	276,512	286,616	296,885	307,316	317,905	328,649
Total FC per year	416,810	426,575	436,512	446,616	456,885	467,316	477,905	488,649
Total FC per month	34,734	35,548	36,376	37,218	38,074	38,943	39,825	40,721
Total FC per day	1,447	1,481	1,516	1,551	1,586	1,623	1,659	1,697

OSTS (VC)	ration/maintenance costs (per month)	consumption (30 liters/day)	(every 5,000 kilometers or every 3 months)	ss (yearly or every 30,000 to 400,000	regular maintenance/repairs	spair of aircon (every 2 years)	driver (Php 1,200/day)	<pre>-led fleet management costs (per month)*</pre>	month	TS (FC + VC) (per month) 103,270 103,270	ded per month to offset TC 103,270	ded per day to offset TC 4,303	s + payment for operator (Php 1,000) 5,303	ssengers	26.51	21.21	17.68	15.15	13.26
										04,083 10	04,083 10	4,337	5,337		26.68	21.21	17.79	15.25	13.26
										4,912	4,912	4,371	5,371		26.86	21.21	17.90	15.35	13.26
	62,42	22,32	600	2,33	167	1,00	36,00	6,11	68,53	105,754	105,754	4,406	5,406		27.03	21.21	18.02	15.45	13.26
	0	0		8		0	0	9	9	106,609	106,609	4,442	5,442		27.21	21.21	18.14	15.55	13.26
										107,479	107,479	4,478	5,478		27.39	21.21	18.26	15.65	13.26
										108,361	108,361	4,515	5,515		27.58	21.21	18.38	15.76	13.26
										109,256	109,256	4,552	5,552		27.76	21.21	18.51	15.86	13.26

Annex F

Estimates of fixed costs (FC), variable costs (VC), and fare per passenger at Php 1.8 million modern jeepney base price and at varying interest rates

AMORTIZATION								
Base price			Yearly amort	zation at vary	ing interest ra	tes (in Php)		
Php 1,800,000/unit	3%	4%	2%	%9	7%	8%	%6	10%
Year 1	288,911	299,897	311,076	322,443	333,996	345,730	357,643	369,730
Year 2	288,911	299,897	311,076	322,443	333,996	345,730	357,643	369,730
Year 3	288,911	299,897	311,076	322,443	333,996	345,730	357,643	369,730
Year 4	288,911	299,897	311,076	322,443	333,996	345,730	357,643	369,730
Year 5	288,911	299,897	311,076	322,443	333,996	345,730	357,643	369,730
Year 6	288,911	299,897	311,076	322,443	333,996	345,730	357,643	369,730
Year 7	288,911	299,897	311,076	322,443	333,996	345,730	357,643	369,730
Total price	2,022,380	2,099,281	2,177,530	2,257,101	2,337,971	2,420,112	2,503,501	2,588,109
Base price	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000
Accumulated interest	222,380	299,281	377,530	457,101	537,971	620,112	703,501	788,109
Average interest per year	18,532	24,940	31,461	38,092	44,831	51,676	58,625	65,676
FIXED COSTS (FC)								
Depreciation (Php 1,800,000 ÷ 10 years)	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000
Annual amortization	288,911	299,897	311,076	322,443	333,996	345,730	357,643	369,730
Total FC per year	468,911	479,897	491,076	502,443	513,996	525,730	537,643	549,730
Total FC per month	39,076	39,991	40,923	41,870	42,833	43,811	44,804	45,811
Total FC per day	1,628	1,666	1,705	1,745	1,785	1,825	1,867	1,909

.E COSTS (VC)	y operation/maintenance costs (per month)	fuel consumption (30 liters/day)	ge oil (every 5,000 kilometers or every 3 months)	ge tires (yearly or every 30,000 to 400,000 kilometers)	entive regular maintenance/repairs	iing/repair of aircon (every 2 years)	ss for driver (Php 1,200/day)	ss for conductor (Php 600/day)	-Philhealth	ative-led fleet management costs (per month)*	C per month	COSTS (FC + VC) (per month) 12	VGS	s needed per month to offset TC 12	s needed per day to offset TC	rnings + payment for operator (Php 1,000)	of passengers					
												26,146		26,146	5,256	6,256		31.28	25.02	20.85	17.87	
												127,061		127,061	5,294	6,294		31.47	25.02	20.98	17.98	-
												127,993		127,993	5,333	6,333		31.67	25.02	21.11	18.09	
	80,	22,5	40	1,8	16	1,0	36,(18,(1,2	6,1	87,0	128,940		128,940	5,373	6,373		31.86	25.02	21.24	18.21	
	954	320	0	67	12	00	000	000	00	16	070	129,903		129,903	5,413	6,413		32.06	25.02	21.38	18.32	
												130,881		130,881	5,453	6,453		32.27	25.02	21.51	18.44	
												131,873		131,873	5,495	6,495		32.47	25.02	21.65	18.56	-
												132,881		132,881	5,537	6,537		32.68	25.02	21.79	18.68	

Annex G

Estimates of fixed costs (FC), variable costs (VC), and fare per passenger at Php 2 million modern jeepney base price and at varying interest rates

AMORTIZATION								
Base price			Yearly amort	ization at vary	ing interest ra	tes (in Php)		
Php 2,000,000/unit	3%	4%	5%	6%	7%	8%	6%	10%
Year 1	321,013	333,219	345,640	358,270	371,106	384,145	397,381	410,811
Year 2	321,013	333,219	345,640	358,270	371,106	384,145	397,381	410,811
Year 3	321,013	333,219	345,640	358,270	371,106	384,145	397,381	410,811
Year 4	321,013	333,219	345,640	358,270	371,106	384,145	397,381	410,811
Year 5	321,013	333,219	345,640	358,270	371,106	384,145	397,381	410,811
Year 6	321,013	333,219	345,640	358,270	371,106	384,145	397,381	410,811
Year 7	321,013	333,219	345,640	358,270	371,106	384,145	397,381	410,811
Total price	2,247,089	2,332,535	2,419,477	2,507,890	2,597,745	2,689,014	2,781,667	2,875,677
Base price	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000
Accumulated interest	247,089	332,535	419,477	507,890	597,745	689,014	781,667	875,677
Average interest per year	20,591	27,711	34,956	42,324	49,812	57,418	65,139	72,973
FIXED COSTS (FC)								
Depreciation (Php 2,000,000 ÷ 10 years)	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000
Annual amortization	321,013	333,219	345,640	358,270	371,106	384,145	397,381	410,811
Total FC per year	521,013	533,219	545,640	558,270	571,106	584,145	597,381	610,811
Total FC per month	43,418	44,435	45,470	46,523	47,592	48,679	49,782	50,901
Total FC per day	1,809	1,851	1,895	1,938	1,983	2,028	2,074	2,121

ABLE COSTS (VC)	pney operation/maintenance costs (per month)	Jaily fuel consumption (30 liters/day)	Change oil (every 5,000 kilometers or every 3 months)	hange tires (yearly or every 30,000 to 400,000 kilometers)	reventive regular maintenance/repairs	Cleaning/repair of aircon (every 2 years)	Vages for driver (Php 1,200/day)	Vages for conductor (Php 600/day)	SSS+Philhealth	perative-led fleet management costs (per month)*	al VC per month	AL COSTS (FC + VC) (per month)	RNINGS	nings needed per month to offset TC	nings needed per day to offset TC	y earnings + payment for operator (Php 1,000)	IES	nber of passengers	00	20	8	50	
												130,488		130,488	5,437	6,437			32.18	25.75	21.46	18.39	10.00
												131,505		131,505	5,479	6,479			32.40	25.92	21.60	18.51	10.00
												132,540		132,540	5,522	6,522			32.61	26.09	21.74	18.64	10.01
	80,	22,5	40	1,8	16	1,0	36,(18,(1,2	6,1	87,0	133,592		133,592	5,566	6,566			32.83	26.27	21.89	18.76	16.47
	954	320	0	67	12	00	000	000	00	16	070	134,662		134,662	5,611	6,611			33.05	26.44	22.04	18.89	16 52
												135,749		135,749	5,656	6,656			33.28	26.62	22.19	19.02	10.01
												136,852		136,852	5,702	6,702			33.51	26.81	22.34	19.15	16 76
												137,971		137,971	5,749	6,749			33.74	27.00	22.50	19.28	16 97

Annex H

Estimates of fixed costs (FC), variable costs (VC), and fare per passenger at Php 2.2 million modern jeepney base price and at varying interest rates

AMORTIZATION								
Base price			Yearly amorti	zation at vary	ing interest ra	tes (in Php)		
Php 2,200,000/unit	3%	4%	2%	6%	7%	8%	%6	10%
Year 1	353,114	366,541	380,204	394,097	408,217	422,559	437,119	451,892
Year 2	353,114	366,541	380,204	394,097	408,217	422,559	437,119	451,892
Year 3	353,114	366,541	380,204	394,097	408,217	422,559	437,119	451,892
Year 4	353,114	366,541	380,204	394,097	408,217	422,559	437,119	451,892
Year 5	353,114	366,541	380,204	394,097	408,217	422,559	437,119	451,892
Year 6	353,114	366,541	380,204	394,097	408,217	422,559	437,119	451,892
Year 7	353,114	366,541	380,204	394,097	408,217	422,559	437,119	451,892
Total price	2,471,798	2,565,788	2,661,425	2,758,679	2,857,520	2,957,915	3,059,834	3,163,245
Base price	2,200,000	2,200,000	2,200,000	2,200,000	2,200,000	2,200,000	2,200,000	2,200,000
Accumulated interest	271,798	365,788	461,425	558,679	657,520	757,915	859,834	963,245
Average interest per year	22,650	30,482	38,452	46,557	54,793	63,160	71,653	80,270
FIXED COSTS (FC)								
Depreciation (Php 2,200,000 ÷ 10 years)	220,000	220,000	220,000	220,000	220,000	220,000	220,000	220,000
Annual amortization	353,114	366,541	380,204	394,097	408,217	422,559	437,119	451,892
Total FC per year	573,114	586,541	600,204	614,097	628,217	642,559	657,119	671,892
Total FC per month	47,759	48,878	50,017	51,175	52,351	53,547	54,760	55,991
Total FC per day	1,990	2,037	2,084	2,132	2,181	2,231	2,282	2,333

RIABLE COSTS (VC)	epney operation/maintenance costs (per month)	Daily fuel consumption (30 liters/day)	Change oil (every 5,000 kilometers or every 3 months)	Change tires (yearly or every 30,000 to 400,000 kilometers)	Preventive regular maintenance/repairs	Cleaning/repair of aircon (every 2 years)	Wages for driver (Php 1,200/day)	Wages for conductor (Php 600/day)	SSS+Philhealth	operative-led fleet management costs (per month)*	tal VC per month	TAL COSTS (FC + VC) (per month) 13	RNINGS	mings needed per month to offset TC 15	nings needed per day to offset TC	ly earnings + payment for operator (Php 1,000)	RES	mber of passengers	200	250	300	350	~~~~
												34,829		34,829	5,618	6,618			33.09	26.47	22.06	18.91	1 L L L
												135,948		135,948	5,665	6,665			33.32	26.47	22.22	19.04	0001
												137,087		137,087	5,712	6,712			33.56	26.47	22.37	19.18	1010
	80,	22,3	40	1,8	16	1,0	36,(18,0	1,2	6,1	87,(138,245		138,245	5,760	6,760			33.80	26.47	22.53	19.31	00 01
	954	320	0	67	7	00	00	00(00	16	020	139,421		139,421	5,809	6,809			34.05	26.47	22.70	19.45	1
												140,616		140,616	5,859	6,859			34.30	26.47	22.86	19.60	17 17
												141,830		141,830	5,910	6,910			34.55	26.47	23.03	19.74	101
												143,061		143,061	5,961	6,961			34.80	26.47	23.20	19.89	11

Annex I

Estimates of fixed costs (FC), variable costs (VC), and fare per passenger at Php 2.5 million modern jeepney base price and at varying interest rates

AMORTIZATION																							
Base price			Yearly amort	ization at vary	ing interest ra	tes (in Php)																	
Php 2,500,000/unit	3%	4%	5%	%9	7%	8%	%6	10%															
Year 1	401,266	416,524	432,050	447,838	463,883	480,181	496,726	513,514															
Year 2	401,266	416,524	432,050	447,838	463,883	480,181	496,726	513,514															
Year 3	401,266	416,524	432,050	447,838	463,883	480,181	496,726	513,514															
Year 4	401,266	416,524	432,050	447,838	463,883	480,181	496,726	513,514															
Year 5	401,266	416,524	432,050	447,838	463,883	480,181	496,726	513,514															
Year 6	401,266	416,524	432,050	447,838	463,883	480,181	496,726	513,514															
Year 7	401,266	416,524	432,050	447,838	463,883	480,181	496,726	513,514															
Total price	2,808,861	2,915,668	3,024,347	3,134,863	3,247,181	3,361,267	3,477,084	3,594,596															
Base price	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000															
Accumulated interest	308,861	415,668	524,347	634,863	747,181	861,267	977,084	1,094,596															
Average interest per year	25,738	34,639	43,696	52,905	62,265	71,772	81,424	91,216															
FIXED COSTS (FC)																							
Depreciation (Php 2,500,000 ÷ 10 years)	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000															
Annual amortization	401,266	416,524	432,050	447,838	463,883	480,181	496,726	513,514															
Total FC per year	651,266	666,524	682,050	697,838	713,883	730,181	746,726	763,514															
Total FC per month	54,272	55,544	56,837	58,153	59,490	60,848	62,227	63,626															
Total FC per day	2,261	2,314	2,368	2,423	2,479	2,535	2,593	2,651															
BLE COSTS (VC)	ney operation/maintenance costs (per month)	ily fuel consumption (30 liters/day)	ange oil (every 5,000 kilometers or every 3 months)	ange tires (yearly or every 30,000 to 400,000 kilometers)	eventive regular maintenance/repairs	eaning/repair of aircon (every 2 years)	ages for driver (Php 1,200/day)	ages for conductor (Php 600/day)	SS+Philhealth	verative-led fleet management costs (per month)*	VC per month	AL COSTS (FC + VC) (per month) 1-	VINGS	ngs needed per month to offset TC 1.	ngs needed per day to offset TC	earnings + payment for operator (Php 1,000)	S	ber of passengers	0	0	0	0	
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												141,342		141,342	5,889	6,889			34.45	27.56	22.96	19.68	00
	80,954	22,320	400	1,867			36,000	18,000	1,200	6,116		142,614		142,614	5,942	6,942			34.71	27.56	23.14	19.83	
					167	1,0					87,070	143,907		143,907	5,996	6,996			34.98	27.56	23.32	19.99	
												145,223		145,223	6,051	7,051			35.25	27.56	23.50	20.15	1 00
						00						146,560		146,560	6,107	7,107			35.53	27.56	23.69	20.30	;
												147,918		147,918	6,163	7,163			35.82	27.56	23.88	20.47	
												149,297		149,297	6,221	7,221			36.10	27.56	24.07	20.63	L C C 7
												150,696		150,696	6,279	7,279			36.40	27.56	24.26	20.80	00 01

* Adopted from the Pateros-Fort Bonifacio Transport Service and Multipurpose Cooperative

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Established in 1985 by University of the Philippines (UP) President Edgardo J. Angara, the UP Center for Integrative and Development Studies (UP CIDS) is the policy research unit of the University that connects disciplines and scholars across the several units of the UP System. It is mandated to encourage collaborative and rigorous research addressing issues of national significance by supporting scholars and securing funding, enabling them to produce outputs and recommendations for public policy.

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