

The Arithmetic Behind and Beyond the Proposed Manila Subway

by Manny Gonzalez

Though my present occupation is that of an innkeeper in Cebu, in a past incarnation I was an investment officer at World Bank-IFC on the Latin American desk. My specialty was running the numbers on private-sector projects, from small ones like a US\$ 200 thousand sugar-mill rehabilitation in Haiti, to larger ones like a US\$ 1 Billion copper mine expansion in Mexico.

"Running the numbers" includes:

- determining that the cost estimates are reasonable and comprehensive;
- forecasting the financial and economic returns, and
- evaluating whether a project has an appropriate scope and economy of scale

In all investment analysis, a healthy scepticism is useful. On one occasion I was assigned to recommend ways to improve profitability in an investment company headquartered in Midtown Manhattan, supposedly worth US\$ 1 Billion. It was owned by the world's then top companies in banking and industry (Citibank, GE, Morgan, IBM, Deutsche, etc. – and that was the problem: with so many illustrious parents, no one felt responsible for watching its numbers). After visiting most of its branches around Latin America and evaluating its asset portfolio, I realized it wasn't even worth US\$100 Million. I recommended shutting it down. Suddenly, a lot of big-name banks and companies were telling me my numbers must be wrong. But they weren't. The company was liquidated.

The proposed 36-km Manila Subway Phase One also has many illustrious parents or backers in both government and industry. And, as with the case described above, no one has looked closely at the numbers.

First, let's look at project cost. Even in ideal circumstances (no corruption, highly competent execution, favorable market prices), the cost of most projects is a skyward-moving target. Four years ago when it was first put on the table, the Manila Subway was estimated to cost US\$4.5 Billion. Now the cost is estimated at US\$ 8 Billion.

Let's pick this 8 Billion number apart. It amounts to US\$ 220 million per kilometer of track. The current estimate for subway construction around the world is US\$ 250 million per kilometer. Some subway systems have come in at US\$ 350 million per kilometer. Given our country's record of pervasive corruption and widespread incompetence, the idea that the Manila Subway will cost less than the world average is unrealistic.

No doubt, some people will be able to produce conclusive "proof" that US\$ 8 Billion is the upper-limit project cost. Believe them at your own risk. The final cost of this "phase one" subway will be considerably more than US\$ 8 Billion. Count on it.

Second, let's talk about future operating viability. Almost all subway systems in the world are loss-making. The New York subway system, for example, costs the taxpayers US\$8 Billion in annual subsidies; that's with a US\$2.75 ticket. The London Underground runs an annual deficit of almost US\$2 Billion, with a typical per-ride price of US\$3-4. Even the efficient Singaporeans, possibly the world's most careful investors, lose US\$200 Million a year on their subway, despite an enormous

rental return on food and retail concessions. Though the Santiago (Chile) Subway's operating results aren't publicly available, there is little doubt that it is in deficit; when the government tried to trim the deficit just a little bit by raising ticket prices from US\$1 to US\$1.05, rioting ensued.

What does this mean? It means that after costing billions of dollars to build, the Manila Subway will not yield a positive future profit, but instead will continue to generate yet more losses. This is exactly comparable to depositing money in the bank, but instead of earning interest, you have to pay the bank every year for the pleasure of keeping your money there.

Whatever it costs, the financial and economic rate of return on the Manila Subway will be Negative. This is not unique to the Manila Subway or a reflection on its proponents. Subways just don't make money; they are a prestige expenditure, a Ralph Lauren polo instead of an Amazon Basic. They are justifiable, perhaps, for richer countries. Poorer countries which embark on subway systems are asking for trouble. We already mentioned Chile. The Greeks also borrowed heavily to build a subway system in order to impress the world for the 2004 Olympics. This triggered a debt crisis that caused a 10-year recession around much of Europe.

Among major cities, as far as I am aware only Hong Kong's MTR makes a profit. Sort of. That is because the government gives it the surface land development rights above new stations. Since the surface development rights could have been sold to private companies instead of given free to the MTR, this is in fact a form of disguised budget subsidy. Without it, Hong Kong's MTR would be a losing business like most other subways.

Third, let's talk about project scope. What does the proposed 36 kilometers of track really mean in practical terms? Will it be enough to make a dent in Manila traffic? Again, we have to do some arithmetic.

New York City has 8 million people and 630 square km of area (excluding Staten Island, which isn't served by the subway). It has 1,100 km of subway track, or 1.5 meters of track per inhabitant. Metro Manila has 630 square km of area (therefore, exactly the same as NYC) but 12 million people.

To have just 10% the average coverage of New York, Manila would need 180 km of track. The existing LRT and MRT have 38 kilometers combined. So, at an arbitrary "10% of New York City" target we are still short 142 km of track. At current worldwide construction costs, 142 km will cost US\$35 billion, not the US\$8 billion number that has been sold to the people. To eventually match the subway coverage of New York, we would need to spend US\$450 Billion.

Half a Trillion US Dollars. To give you some perspective on this unimaginable number, the UK's entire national government debt is about US\$ 2 Trillion. Germany's is about US\$ 3 Trillion.

Okay, so we can't afford a subway as extensive as New York City's. But wouldn't even 36 kilometers do some good?

In a word, NO. It might even do more harm.

Find a map of the proposed route for the single-line Manila Subway (Google "Route Manila Subway"). It starts northwest of UP Diliman, then goes through Ortigas (two stations), BGC (one station), and eventually ends in NAIA. For the new subway to be a real convenience to you, you will need to live within walking distance of one station, and work, study, or shop in walking distance of another.

How many people fit that description? Very few. Most riders will not be so lucky and will need another form of transport to connect *to* their entry subway station, or *from* their exit station, or both.

The implication is that within a considerable distance of each of the fourteen subway stations, the surface roads will be in perpetual gridlock, as private cars, taxis, buses, and jeeps try to bring or collect the people needing transit connections. Only God knows what will happen in already-gridlocked places like Kalayaan, Ortigas, BGC, and NAIA.

Future gridlock aside, won't the Manila Subway at least serve some people? Maybe, but not enough to notice. Paris's Metro has 214 kilometers of track for an area of just 104 square kilometers (the area bounded by the ring highway called the Peripherique). This amounts to 2 linear km of track per square km, in order to fulfill the original design consideration of the Metro, which was that no spot in Paris should be further than 15 minutes' walk from a subway station.

The Manila Subway's equivalent number is $1/20^{\text{th}}$ of a linear km of track per square km, i.e., about 98% less subway coverage than Paris. In sum, unlike what you have been led to believe, the Manila Subway Phase One single line cannot possibly be of use to most Manila residents. Building 36 kilometers for a city as dense and large as Manila is like publishing a book with 98% of the pages missing, or trying to use a computer monitor with only 2% of the pixels firing.

Let's pursue this line of investigation: Singapore's MRT needs 120 stations to support a daily ridership of 3.3 million. That comes to a throughput of 27,500 rides per station per day. New York's subway has 4.7 million daily ridership and 420 stations; that comes to 11,000 rides per station per day. ("Ride" is defined as an entry into a station to board a train; therefore a person who takes the subway to work, and then back home, accounts for two rides.)

Meanwhile, our government claims that our new subway has a "design capacity" of 1.5 million rides daily, or 110,000 per station, almost four times what efficient Singapore can manage, and ten times New York.

This “design capacity” is a deliberate lie to the public. The usage constraint on any subway system is not the hypothetical number of cars or trains that can run on the tracks daily. It is the capacity of each station to receive incoming passengers and funnel them to the train platforms, while getting the arriving passengers out of the station and to their real destinations whether by walking or transferring to another form of transport. 110,000 per station? Think hard about that number, and you will see how absurd it is. My guess is that when the Manila Subway is operational, kilometers-long waiting lines will be needed at each of the fourteen stations, just to get in. People will have to wait an hour to take a 30-minute train ride.

110,000 riders per Manila Subway station is highly improbable. For the sake of discussion let's imagine we can beat Singapore in efficiency, and somehow achieve 30,000 riders per station per day. That's 420,000 rides, or 210,000 people able to use the subway daily between work and home.

US\$ 8 Billion project cost to make 210,000 commuters happy. That comes to an investment cost of US\$ 38,000 apiece for each commuter made happy (maybe, not counting the gridlock around the stations).

I know several ways to get not 210,000 people, but 2 million people off the roads and happy, for just US\$ 1-2000 each - a 98% savings compared to building the Manila Subway:

1. Extend micro-finance to give people livelihoods that they can practice at home in Metro Manila (or better yet in a remote province) – a sewing machine, a T-shirt printer, a computer, cooking lessons and a gas stove. . . This is a more clear-cut way to reduce public demands on transportation than building an utterly inadequate single subway line.

2. Mount a publicity campaign to convince people to use electric scooters or electric bicycles. Lend or give the vehicle. Either would cost only US\$ 500, though bike lanes would cost some paintwork and extra street lighting. Some low-cost lightweight overpasses dedicated to scooters and bikes would be nice. Imagine such an overpass crossing EDSA from Forbes Park/BGC to Ayala Ave. Even some fat cats might be tempted to junk their cars. To make this more palatable to more people, allow bicycle rather than motorcycle helmet specs to be used, since most scooter and bicycle accidents are simple falls from a 2-meter height. While we're at it, why doesn't someone market a solar-powered ventilated helmet?
3. Create seed cities far away from Metro Manila, and encourage people to move there. At a cost to government of about US\$ 500 million each, one seed city could eventually absorb 500,000 residents (i.e., at a cost of US\$ 1000 per person). In the process we would lessen population density in Manila, making the other Greater Manila residents happy, too. Free of charge. This idea is described in some financial detail in my book, *Crazy Wild Ideas – Out-of-the-Box Solutions for Fixing the Philippines* (available on Amazon Kindle).

Let's do a combination of all three of these, and for far less than US\$ 8 Billion we can relieve Metro Manila of 2 million commuters daily. This will fix the traffic altogether - for everyone, not just for 210,000 people.

Arithmetic is a powerful tool. The Philippines should learn to use it for a change.