TOLL ADJUSTMENT FORMULA IN THE PHILIPPINES: SOME ISSUES

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Abstract: In the Philippines, private sector participation in the road transport sector comes either under the amended Build-Operate-Transfer (BOT) Law or joint venture agreements (i.e., with the Philippine National Construction Corporation and Public Estates Authority). All these toll road franchises will be subject to the grant and approval of the Toll Regulatory Board (TRB). A toll adjustment formula is a feature of toll road concessions. This is essentially a mechanism for the investor (whether private or public enterprise) to recoup its investments while at the same time for the government to ensure lowest possible toll fees. With a number of toll roads already in the implementation stage, the paper attempts to analyze the toll adjustment formula already incorporated in existing/perfected concession agreements. The paper will focus on whether the formula have been instrumental in achieving reasonable returns or lowest possible toll fees and other related institutional issues to serve as a valuable input in structuring future adjustment formulas.

Key Words: toll adjustment formula, private sector participation, price regulation

1.0 INTRODUCTION

1.1 Private sector participation

Fiscal constraints and rapidly increasing demand for infrastructure facilities and services has forced the Philippine government to look for innovative solutions to finance new infrastructure projects. A policy environment attracting private sector participation was thus embarked upon to meet infrastructure supply bottlenecks and to aimed at tapping the inherent efficiency of the private sector (i.e., in management, operation and maintenance) in the provision of infrastructure services and facilities.

In the road transport sector, private sector investment was attracted into toll road development in exchange for guaranteeing, among others, the application of a reasonable toll adjustment formula to recoup the investment (plus a fair return) under a term-bound concession period. At present, modes of private participation in the sector are pursued under the authority of agency charters or via the Philippine BOT Law, as amended.

1.2 Regulatory Aspect

Much effort has been exerted to entice private risk capital but government has yet to complete the institution of appropriate economic regulation commensurate with the emerging trends and challenges of private sector participation. Nonetheless, part of the overall

strategies in the Philippine National Development Plan recognizes that government and private sector cooperation must come under the ambit of a proactive regulatory environment. Ultimately, the task of regulation must ensure that public interest is protected from monopolistic markets while ensuring the sustainability of the entire toll road sector. A discussion on the responsibilities of various agencies and approving authorities therefore appears to be necessary.

From the point of view of regulation, long-term contracts such as those entered into by government under the BOT Law or with joint venture partners are essential attempts to pre-define regulatory environments governing such contracts. For developing countries like the Philippines wherein regulatory capability is mostly perceived to be unpredictable, private investors seek assurances from regulatory uncertainties via long-term contracts. These contractual agreements attempt to specify ex ante and in detail the cost and risk allocation between parties. There is usually an attempt to provide for all imaginable circumstances in the hope that regulatory discretion is minimized and regulation becomes simply a matter of contract administration governed by the legal instrument of a contract.

1.3 Statement of the Problem

The toll road formula represents a mechanism for the investor to recoup and earn a reasonable return on its investment. It is likewise the same mechanism that enables government and its regulatory bodies to ensure that the public will be provided with toll road services at the lowest possible cost.

The trend towards the development of more toll roads and the issuance of new toll road franchises has resulted in subsequent approvals by government of various toll road formulas. These include the existing North and South Luzon Expressways as well as four other toll roads currently under various stages of implementation in the Metro Manila area and its environs. Although all these formula generally use the parametric form, the use of different variables and their varying definitions do not provide the level of confidence that, indeed, these toll formulas have been instrumental in achieving reasonable returns or lowest possible toll fees.

This is compounded by the fact that private sector participation in toll road development follows two distinct and separate routes, via the BOT and via joint ventures. While each route may have its own advantage, the evaluation of proposals as these go through the distinctly separate approval processes appears to differ substantially. There is the matter of perspective afforded by the differing mandates of approving authorities and the possibility of sub-optimal decisions that may result as an outcome of such. Although the paper will in no way be an exhaustive analysis of institutional structures in the toll roads sector, it will discuss how existing institutional approval processes may affect the final form of the various toll adjustment formulas.

1.4 Scope and Limitations

The paper focuses on toll roads during the implementation stage (e.g., Metro Manila Skyway, Manila-Cavite Tollway, Southern Tagalog Arterial Road Project and Manila North Tollway) particularly in its price regulation. It will not cover the technical regulation aspects of toll roads (e.g., road design standards, minimum standards for operation and maintenance, etc.).

The analysis will dwell on the differences and similarities of existing parametric formula. It will not attempt to recommend other types of cost recovery in lieu of the parametric formula (e.g., RORB, RPI-x). Likewise, the paper will concentrate on the periodic adjustment component of the toll adjustment formulas.

Meanwhile, risk allocation among the different parties will only be discussed in conjunction with the analysis of the toll adjustment formula. The paper does not attempt to present a thorough discussion of project risk allocation. The paper will not likewise dwell on the institutional structure of regulatory agencies in the Philippines (TRB and ICC) or the design of an appropriate regulatory mechanism.

2.0 PRIVATE SECTOR PARTICIPATION

2.1 The BOT Law

In 1990, Congress enacted Republic Act (RA) 6957 (later amended by RA 7718 in 1994), or the "BOT Law," which allows the private sector to finance, construct, maintain and operate public infrastructure projects. The BOT scheme is a contractual arrangement between the government and the private contractor, which obligates the latter to finance and construct an infrastructure project for the public sector, and operate and maintain the facility for a fixed period. During this operating period, the contractor is allowed to charge rent, user charges, or toll fees to recover investment cost, repay project debts and generate a reasonable return on investment. It is important to note that the private sector is expected to bring not only financing for the project but also cost efficiencies together with operating know-how and technical advantage.

2.2 Joint Venture Agreements

Joint venture agreements can be reached through direct negotiations between a government corporation and the private joint venture partner. Such negotiations are independent of the BOT Law approval and evaluation process.

The Philippine National Construction Company (PNCC) and the Public Estates Authority (PEA) are vested by their respective charters with the authority to enter into joint ventures with the private sector for the development and operation of toll road infrastructures. The PNCC and PEA are government owned corporations. Both have been granted toll operation franchises by the TRB to develop toll roads in Metro Manila and environs. Unlike the PNCC franchise, PEA's charter does not mandate the TRB to acquire the necessary land and/or rights of way and cede the same to PEA at no cost.

3.0 TOLL ROADS IN THE PHILIPPINES

3.1 Institutional Arrangements

The principal national government agencies with institutional responsibility (i.e., policy regulatory and operational responsibilities) for toll roads development are Department of Public Works and Highways (DPWH), the Toll Regulatory Board (TRB), and the National Economic and Development Authority (NEDA).

The DPWH is tasked with the construction and maintenance of the national roads system. It oversees the planning, programming and implementation of national road projects. The DPWH BOT – Project Management Office (BOT-PMO) is responsible for, among others, the identification of potential BOT projects including toll roads. The TRB, an attached agency of DPWH, has the primary function of granting authority for the operation of toll facilities and the issuance of a toll operation certificate. It is also empowered to determine and modify toll rates, and to issue contracts for the construction, operation and maintenance of toll facilities.

NEDA is the economic planning body of the national government. Two Cabinet level inter-agency committees under the NEDA Board are directly relevant to the infrastructure sector, the Investment Coordination Committee (ICC) and the Infrastructure Committee (InfraCom). Review and approval of major capital projects, including toll roads under the public investment program fall within the purview of the two committees. With the passage of the BOT Law, the ICC is given an additional mandate to: (a) approve national BOT projects costing up to ₱ 300 million and LGU projects costing above ₱ 200 million; (b) review and endorse for NEDA Board approval national projects costing above ₱ 300 million, and; (c) prescribe the reasonable rate of return for projects implemented through negotiated contracts.

The Corporate Affairs Group of the Department of Finance (DOF-CAG) has oversight functions on all government owned and controlled corporations (GOCCs). It reviews the impact of BOT projects on the financial position of the proponent GOCC and on the consolidated public sector financial position. The DOF-CAG review is usually a requisite for project approval by the NEDA ICC. The Coordinating Council for Private Sector Participation (CCPSP) coordinates and monitors the government's BOT program. The Board of Investments (BOI) is responsible for granting fiscal incentives (e.g., income tax holiday, etc.) in accordance with the Omnibus Investment Code.

3.2 Approval Process for Toll Roads

3.2.1 BOT Law

The BOT Law allows for two alternative modes of implementing BOT projects either through public bidding (solicited) or through negotiated unsolicited proposals. For solicited proposals, responsibility for project preparation rests with the implementing agency involved. For unsolicited proposals, the project proponent will be required to undertake a feasibility study.

The approval process for publicly-bid projects follow distinct stages, namely: (a) project identification and preparation; (b) ICC first pass approval of the project concept for BOT implementation; (c) pre-qualification, bidding and bid evaluation; and (d) contract award and ICC second pass approval of project contract.

For unsolicited proposals, the approval process consists of the following stages: (a) submission of a complete proposal by the private sector proponent, evaluation by the implementing agency and endorsement to the ICC; (b) first-pass ICC approval of the project; (c) contract negotiation; (d) second-pass approval of the project contract; and, (e) solicitation of comparative proposals and contract award.

Toll roads pursued under the BOT Law may no longer require the issuance of a toll operation certificate from the TRB. However, the toll adjustment formula is subjected to TRB review before the government can agree to guarantee its enforcement.

3.2.2 Joint Venture Agreements (JVA)

The initial step is usually for the private proponent to first approach the GOCC franchise holder with a joint venture proposal. The future partners usually enter into an informal agreement, which facilitates the conduct by the proponent of the necessary feasibility studies to develop the project. The ensuing negotiations eventually result in a draft JVA for consideration of the respective parties.

For the government side, the approval from the corporate board (i.e., the PNCC and the PEA boards) provides the authority for the agency to become party to the JVA. Depending on the corporate charter and other applicable legislation, the same agreement may be subject to confirmation and approval by the President of the Republic of the Philippines. The joint venture partners are then enabled to submit a joint investment proposal to the TRB for review and approval.

3.3 Profile of the Toll Roads

Existing toll road development in the Philippines are concentrated within a 100-kilometer radius of Manila along major transportation corridors where traffic levels are significant. Table 1 presents a description of the toll roads included in this paper while Table 2 information of the same.

Table 1: Toll Road Description

Toll Roads	Description
Metro Manila Skyway, Phase I (MMS I)	The MMS involves 35.4 km of elevated and 68.8 km of at-grade expressway sections. Stage 1, Phase 1 involves the construction of an elevated expressway from Nichols to Buendia, and the upgrading of the at-grade portion of the SLE from Alabang to Magallanes. Stage 1, Phase 2 will be an elevated expressway from Bicutan to Nichols. Stage 2 will cover the stretch from Bicutan to Alabang.
North Luzon Tollway Project (NLTP)	The project consist of three phases. Phase 1 involves the extension and rehabilitation of 4 segments of the NLE about 91.12 km long. Phase 2 involves the construction of three segments of the Northern portion of C-5 amounting to 26.72 km. Phase 3 involves the construction of four segments of the Subic Expressway about 64.35 km long.
Manila-Cavite Tollway (MCT)	The project involves the upgrading/construction of a 25.5 km tollway from Metro Manila to Noveleta, Cavite. It comprises three sections: (a) the upgrading of the existing 6.6 km R-1 expressway from Airport Road to Zapote; (b) the construction of the 7.5 km six-lane C-5 link connecting the R-1 expressway with the SLE; and, (c) the construction of the 11.4 km, four-lane R-1 extension to Kawit and Noveleta.
Southern Tagalog Arterial Road (STAR)	The STAR project consist of two stages. Stage I is a 22.16 km four-lane expressway covering the stretch from Sto. Tomas to Lipa City. Stage II is a 19.74 km two-lane expressway from Lipa City to Batangas City which will eventually be widened to four-lane expressway.

Table 2: Other Toll Road Information

	MMS I	MCT	STAR	NLT
Estimated Cost	US$ 529M	US$ 250M	US$ 73M	US$ 480M
Mode of PSP	JV (PNCC charter)	JV (PEA charter)	BOT (solicited mode)	JV (PNCC charter)
Proponent	PNCC, PT Citra	PEA, UEM-MARA	STAR Infra. Dev't. Corp.	PNCC, MNTC
Toll System	open, closed	open	closed	closed
Adjustment	every 2 yrs.	every 3 yrs.	every 3 yrs.	every 2 yrs.
Concession Period	30 years	35 years	30 years	30 years

4.0 EVALUATION OF TOLL ADJUSTMENT FORMULAS

4.1 Framework of Analysis

Price regulation has several objectives: (a) sustainability – ensuring that the regulated company must be able to finance its operations and any required investment; (b) equity – ensuring that the returns to the regulated company are commensurate to the degree of investment risk; and, (c) efficiency. Otherwise stated, price regulation aims to protect consumers while ensuring that the company remains viable and has an incentive to operate efficiently.

Thus, the crafting of an ideal toll adjustment formula has to consider manifold objectives. The first consideration is that prices should be set in real terms, for a predetermined period. This ensures that the investor gets a real, as opposed to nominal, investment return and allows a reasonable recoupment period. Second allow for the recovery of construction and rehabilitation cost and the cost of financing for sustainability considerations. Finally, recovery of operation and maintenance costs can be imputed in the formula. The analysis will concentrate on these premises and the appropriateness of their incorporation in the formula.

The financial analysis serves as one of the most important basis in the setting of toll rate levels, in the identification of circumstances warranting toll adjustment and in the crafting of toll adjustment formulas. For revenue-generating projects to be considered financially feasible, expected net revenues should sufficiently cover total project costs including maintenance, permits full servicing of debt, and provide a reasonable margin of profit to the investor/operator. Meanwhile, from the government's perspective (i.e., NEDA ICC) the result of the economic analysis serves as the primary decision criterion (i.e., the economic IRR should be greater than the social discount rate).

Financing arrangements and the traffic forecasts are also factors that are considered in the economic and financial analysis and feeds into the crafting of a toll adjustment clause. The financial evaluation of the NEDA-ICC involves two perspectives, the total investment perspective (i.e., project IRR should be greater than weighted average cost of capital) and the equity owner's perspective (i.e., equity IRR should be greater than ICC prescribed IRR which

is usually within 18-21%). For TRB financial evaluation only the total investment perspective is considered.

4.2 Characteristics of Existing Toll Road Formulas

Tolls are usually collected under open or closed toll operating systems. An open toll operating system, sometimes referred to as flat toll system, is where charges are made on the basis of a fixed fee collected upon entry into/exit from the tollway. A closed system is a method of collecting toll from road-users based on distance traveled. Toll rates differ for different types of vehicles. This approach is adopted because the number of axles on the vehicle can act as a proxy for the road space used by the vehicle and the natural wear and tear that the vehicle inflicts on the road pavement. The Class 1 vehicle category consists of cars and jeepneys; Class 2 vehicles, buses and light trucks; and Class 3 vehicles, heavy trucks and trailers. Usually Class 2 and Class 3 vehicles are charged twice and thrice more than Class 1 vehicles, respectively.

Toll adjustment formula usually have periodic adjustments and interim adjustments. Periodic adjustments refer to the regular adjustment/application of the formula at a specified time interval (usually ranging from one year to three years). Interim adjustments are usually provided for in case of extraordinary circumstances (e.g., force majeure, significant peso depreciation, etc.). The interim adjustment component is generally similar for the five toll roads and is presented for comparative purposes only.

The toll adjustment formula, if properly constructed, forms part of the project's risk allocation and tends to mitigate the risks assumed by the proponent and creditors. Toll adjustment formulas, which can range from the simple to the complex, usually include such variables/factors as: (a) price indices; (b) interest rates; (c) currency exchange rates; and, (d) minimum base escalators.

Inflation rates both domestic and foreign or the conveniently preferred Consumer Price Index (or at times the Construction Price Index) is a constant feature of parametric formulas. Its inclusion in the formula ensures that the proponent gets a fair real (as opposed to nominal) return on its investment. Interest rates, both domestic and foreign as well as the prevailing exchange rates between the Philippine peso and the denomination of the foreign debts, are reflected in the parametric formulas to hedge on possible changes in the cost of financing. The concession agreement usually specifies the exact rate to be used (e.g., "the average 91-day Treasury Bill Rate for the 1-month period preceding the adjustment" for local interest rates), as well as the data source (e.g., "as published in the official gazette of the Bangko Sentral ng Pilipinas"). In cases where toll rates are initially pegged at relatively low levels, the TRB allows a minimum base escalator (step-up) to be incorporated in the parametric formula. At times, parametric formulas are two-tiered, one rate when the loans have yet to be repaid and another when the loans have been fully repaid.

4.3 Analysis of Toll Road Formulas

Prior to analyzing the different parametric formulas a look at the generic parametric formula as recommended under the BOT Project Development Manual of the may be instructive. As the PNCC parametric formula is somewhat similar to the generic formula, the same is discussed prior to the details of the parametric formula of the four selected toll roads.

$$R = K(R_O) \quad (1)$$

$$K = \alpha\,[\,a(I_L/I_{LO}) + a'(I_F/I_{FO})\,(E/E_O)] + \beta\,[L/L_O] \quad (2)$$

where

R	=	new toll rates	R_O	=	old toll rates
I_L	=	new local interest rate	I_{LO}	=	old local interest rate
I_F	=	new foreign interest rate	I_{FO}	=	old foreign interest rate
L	=	new local inflation rate	L_O	=	old local inflation rate
E	=	new peso-dollar exchange rate	E_O	=	old peso-dollar exchange rate

α = periodic debt service divided by total periodic costs

β = periodic operating costs divided by total periodic costs

a = ratio of local debt to total debt service

a' = ratio of foreign debt to local debt service

This toll formula has two terms representing two major components of project cost: debt service and operating costs. The first term represents the effect on the initial toll fee of changes in the level of outstanding debt including changes in the cost of debt. The second term represents the effect of changes in operating costs. Debt service is tied to both foreign and domestic interest rates as well as foreign exchange rates while operating costs (such as labor) are tied to the local inflation rate. The coefficients α and β are the weights attached to each cost component based on how each component affects total costs.

4.3.1 The PNCC Toll Adjustment Formula

Pursuant to PD 1894, the PNCC is allowed to annually increase its toll collection based on the following formula:

$$R = K(R_O) \quad (3)$$

$$K = 0.60\,[\,a(I_L/I_{LO}) + a'(I_F/I_{FO})\,(E/E_O)](C/C_O) + 0.30\,[L/L_O] + 0.10 \quad (4)$$

C = Construction Materials Price Index (CMPI) at the time of adjustment computed as the sum of the unit prices of cement, asphalt concrete, reinforcing bars and diesel as authorized by government price control authority and if not controlled, as quoted in the open market

C_O = Construction Materials Price Index when last toll rate was approved

The formula has the same notation as the generic parametric formula with the exception of the inclusion in the first term of the change in construction price index. Since inflation has been incorporated via the CMPI, all variables are converted into real terms.

The value 0.10 or the third term of the equation is another difference. This is a mathematical correction, to ensure that all weights add up to one. It does not represent an automatic annual toll increase of 10%. A mathematical check confirms that there should be no increase in tolls if there is no increase in any of the variables. However, note how the debt service plus the operating cost sum to 0.90. Even without any increase in prices, using a weight less than one would result in the reduction of toll fees.

With respect to this particular adjustment formula, inflation risk, foreign exchange risk, and cost of debt risk (i.e., interest rates) are generally passed on to the toll road users. In turn,

government is usually asked to guarantee the enforcement of the parametric formula or is otherwise called upon to (a) provide the revenue shortfall or (b) buy-out the project in the event that the toll adjustment is not enforced.

One implicit assumption in the analysis of the parametric formulas is that the toll rates incorporate operating and capital cost recovery plus a rate of return component. However, the manner of the financial evaluation being undertaken (especially if analysis is focused on the project IRR) makes it possible (or probable) that the coefficients and variables in the parametric formula may be arbitrarily determined (i.e., formula do not entirely correspond to the structure of costs). At any rate, the inaccessibility of the financial models (e.g., financial statements, etc.) makes it quite difficult to determine with certainty the logic behind some of the items in the parametric formula (e.g., constants and coefficients).

4.3.2 The Metro Manila Skyway (MMS)

$$TR_N = TR_E * [1 + (MBE_{N-1}(1+d_{N-2})) + d_{N-2}] * [1 + (MBE_N(1+d_{N-1})) + d_{N-1}] \quad (5)$$

TR_N	=	toll rate as adjusted.
TR_E	=	existing toll rate
d_{N-1}	=	devaluation rate in same year referred to in MBE_{N-1}
d_{N-2}	=	devaluation in rate in year d_{N-1}
MBE	=	minimum base escalator
MBE_N	=	MBE in years when toll rates are subject to adjustment
MBE_{N-1}	=	MBE in year before MBE_N

The parametric formula is dependent on the initial toll rate and two variables: (a) the minimum base escalator, MBE; and, (b) the devaluation rate, d.

The formula is tailored for a two-year adjustment interval. The minimum base escalator rate will be constant every five years with a maximum of three five-year changes (or a minimum of two five-year changes should an 18-year income tax holiday without tax on dividends be granted).

Assuming peso devaluation will not materialize, the toll rate will increase every two years by 16.64% and 17.72% based on an MBE of 8.00% and 8.50% respectively.

Note that inflation does not figure into this formula. Two interesting points may be inferred: (a) the inflation risk is being shouldered by the proponent; or (b) the formula assumes a directly proportional relationship between the devaluation rate and inflation rate. It may be pointed out that point (b) is not entirely without basis since the price level (or CPI), measured as the weighted average of a basket of goods, contains a foreign cost component.

Note that without adjustments for inflation, real rates of return on equity-capital may be substantially eroded over time. Consequently, there may be a tendency to front-up cost recovery through substantive multipliers for the MBE during the early concession years.

It may be noted that the benchmark or reference rate for the devaluation rate was not properly identified.

Meanwhile, for this particular adjustment formula, risks associated with interest movements are borne by the proponent. Foreign exchange risk, and possibly inflation risk, are borne by the toll road users. Again, the government guarantees the enforcement of the parametric formula.

4.3.3 The Manila-Cavite Tollway (MCT)

$$AT_N = AT_O (K + C^3) \quad (6)$$

$$K = 0.25[(CPI_C - CPI_R)/CPI_R] + 0.20[(ER_C - ER_R)/ER_R] \quad (7)$$

$C = 1.050$ (1^{st} to 15^{th} year) and $C = 1.010$ (16^{th} up to 35^{th} year)

AT_N = toll rate for next 3 years
AT_O = previous toll rate
CPI_C = CPI at toll review date
CPI_R = CPI at previous toll review date
ER_C = exchange rate between the peso and the currency in which the loans are denominated calculated by taking the average rate in each month as published by the BSP over the 6 months preceding the toll review date
ER_R = exchange rate between the peso and the currency in which the loans are denominated on the date of the agreement or the exchange rate at the last toll review date.

The parametric formula is dependent on the initial toll rate, on a constant C and two other variables: (a) the consumer price index, CPI; and, (b) the currency exchange rate, ER.

Even without any change in CPI and the ER, the formula prescribes a 15.76% increase in toll rates after every three years for the first 15 years and 3.03% every three years thereafter.

The variable K is explained by two items; CPI and the ER. The rationale for the relative weights or coefficients of the CPI and ER factor is not very clear. They presumably are the components of the toll road cost recovery which are susceptible to changes in inflation and exchange rates (i.e., in this case 45% of the total). The variable K however does not change after full loan repayment, implying either that the preceding statement is false (hence indicating that the formula is somewhat arbitrary) or it is an erroneous application of the formula (i.e., should be adjusted after full loan repayment to exclude the ER component).

The constant C has a higher value for the first 15 years presumably because loans are being amortized within this period. The level of C^3 increments can indicate that the base toll rates (or traffic) may initially have been set at very low levels with the intention of increasing toll rates at a periodic but gradual pace. This underscores the need to determine the appropriate C based on mutually acceptable financial models.

Note that for toll adjustments occurring beyond one-year intervals, care should be taken to ensure that the CPI and ER correction factors do not ignore inflation and currency fluctuation in between toll review dates (the interim adjustment however prescribes correction factor for wide variations of these variables) and do not entirely rely on the endpoints (or a span of months) of toll review dates. Likewise, care must be taken that the CPI is consistently referenced to a single base year.

For this particular adjustment formula, risks associated with interest movements are borne by the proponent. Foreign exchange and inflation risks are possibly shared by the proponent and the toll road users. Government guarantees the enforcement of the parametric formula.

4.3.4 The Southern Tagalog Arterial Road (South Luzon Expressway Extension)

$$TR_N = TR_O (K+C)^3 \text{ for the } 1^{st} \text{ up to the } 10^{th} \text{ year and } C = 1.045 \quad (8)$$

$$TR_N = TR_O [K + (1+C)^3] \text{ for the } 11^{th} \text{ up to } 30^{th} \text{ year and } C = 0.000 \quad (9)$$

$$K = 0.25[(CPI_C - CPI_R)/CPI_R] + 0.20[(ER_C - ER_R)/ER_R] \quad (10)$$

TR_N	=	toll rate for next 3 years
TR_O	=	previous toll rate
CPI_C	=	CPI (Batangas) at toll review date
CPI_R	=	CPI (Batangas) at previous toll review date
ER_C	=	exchange rate between the peso and the currency in which the loans are denominated calculated by taking the average rate in each month as published by the BSP over the 6 months preceding the toll review date
ER_R	=	exchange rate between the peso and the currency in which the loans are denominated on the date of the agreement or the exchange rate at the last toll review date.

This toll formula has similarities with the preceding Manila-Cavite Tollway formula in that it is crafted for a three-year adjustment period and is dependent on the initial toll rate, on a constant C and two other variables: (a) the consumer price index, CPI; and, (b) the currency exchange rate, ER. Presumably as soon as project loans are fully repaid, a variation to the original formula is proposed on the 11^{th} year such that for the succeeding 20-year concession period, the constant C takes a value of zero.

Even without any change in the CPI and the ER, the formula prescribes a 14.11% increase in toll rates after every three years for the first 10 years and none thereafter.

For the first 10 years, the toll multiplier is the term $(K+C)^3$ in contrast to the $(K+C^3)$ in the MCT adjustment formula. What makes the $(K+C)^3$ term confusing is that the variable K has already been adjusted as a three-year correction factor (i.e., CPI and ER correction factors are based on the three-year interval in between toll review dates). The term $(K+C)^3$ would therefore appear to be an erroneous application as the position of the K variable in the formula implies correcting for the factor twice.

Risk allocation for this parametric formula is similar to the Manila-Cavite Tollway.

4.3.5 The Manila North Tollway Project

$$ATR_P = ATR_O (I_P) \quad (11)$$

$$I_P = (PCPI_P/PCPI_O)(1 + F_C)^P [A_P + ((B_P (E_P/E_O)/(D_P/D_O))] \quad (12)$$

where loans have been fully repaid but not later than 31 December 2013

$$ATR_P = ATR_{P-1} [1 + (((PCPI_P/PCPI_{P-1}) - 1)(50\%))] \quad (13)$$

after 31 December 2013

where F_C = 1% for the period up to the operation date of the first phase including the first adjustment of the toll rate, and 1.25% for the period following the operation date of Phase 1

$_P$	=	year p
ATR_P	=	authorized toll rate
ATR_O	=	initial reference authorized toll rate
$PCPI_P$	=	Philippine CPI for the month prior to filing the request for adjustment
$USCPI_P$	=	US CPI for the month prior to filing the request for adjustment
$PCPI_O$	=	Base Philippine CPI as 30 June 1995
$USCPI_O$	=	Base US CPI as of 30 June 1995
A_P	=	% of total debt service in peso during the period of 6 months prior to the filing the request for adjustment
B_P	=	% of total debt service in US$ during the period of 6 months prior to the filing the request for adjustment
E_P	=	rolling average of US$ selling rate against peso, as published by the BSP, for the period of 6 months prior to filing the request
E_O	=	base average of US$ selling rate against peso, as published by the BSP as of 30 June 1995
D_P	=	CPI differential calculated as the ratio $PCPI_P$/ $USCPI_P$
D_O	=	CPI differential calculated as the ratio $PCPI_O$/ $USCPI_O$

The parametric formula is dependent on the initial toll rate, on a constant F_C and three other variables: (a) the consumer price index, CPI and D; (b) total debt service, A_P and B_P; and, (c) foreign exchange rate, E. The formula is intended to cover a two-year period.

It may be noted that the toll rate multiplier for this project is 2.5 for Class 2 vehicles as compared with a multiplier of 2.0 for Class 2 vehicles in other toll roads.

By re-arranging the terms in the toll formula, it can be confirmed that local debt service (A_P) is tied to local price level changes while foreign debt service (B_P) is tied to foreign price level changes and exchange rate fluctuations. The $(1 + F_C)^P$ term is a multiplier which cannot be fully explained as it has not been defined properly. Its inclusion implies that it is a term affected by both changes in debt service level and inflation, which practically rules it out as an adjustment to account for the operating cost.

After repayment of project debt and barring movements in the inflation rate, no adjustment is expected in the toll rate. During the same period, toll adjustment will only reflect 50% of changes in price levels.

For this particular adjustment formula, risks associated with interest movements are borne by the proponent. Prior to full loan repayment, foreign exchange and inflation risks, are passed on to the toll road users. After loan repayment, inflation risk is shared equally by the proponent and the toll road users. Government of course guarantees the enforcement of the parametric formula.

4.4 Interim Adjustment

Interim adjustments are regular feature of concession agreements and are usually provided for in the following circumstances: (1) force majeure and/or additional cost of works arising from force majeure, (2) a currency devaluation resulting in depreciation of the value of the

peso relative to the US dollar; (3) compensation for lower toll rates arising from non-enforcement of toll adjustment formula; (4) material adverse government action including change in circumstances and change in laws; and, (5) the Philippine CPI varies substantially.

4.5 Related Government Exposure/Guarantees

As mentioned earlier, government guarantees the enforcement of duly approved toll rate adjustment formulas. Other project guarantees usually sought by the proponent include: (a) land acquisition; (b) foreign exchange convertibility; (c) compensation for lower toll rates arising from non-enforcement of toll adjustment formula; (d) compensation due to force majeure and/or additional works arising from force majeure; (e) compensation due to design changes; and, (f) compensation for contract termination as a result of government's default. A risk matrix showing how risks are usually allocated among the parties involved in toll road projects are must in BOT projects. Most of the major risks are allocated following the generally accepted principle that risks should be absorbed by the party best able to manage or mitigate its impact.

5.0 ISSUES

5.1 Issues on the Approval Process

Two modes of private sector participation in toll roads development, characterized by two separate and inadequately linked approval processes and differing emphasis on financial merit, undermines the effectiveness of pricing regulation. Consequently, the proper allocation of project risks in the crafting of the parametric formula is compromised.

The preference by some parties for the joint venture route, rather than the rigors of the formal BOT process, is attributed to what is perceived a speedy, less bureaucratic and more convenient JV approval process. The drawback is that with the absence of competitive bidding, and notwithstanding rigorous TRB evaluation, JVAs may not always ensure least possible toll rates to the end-user. JVAs do not go through the competitive process and do not have clearly defined evaluation parameters/procedures in the negotiation process; on the other hand, the requirements under the BOT Law are seen to be more rigorous and time consuming.

The very nature of the joint venture agreement, particularly for the PNCC franchise, which automatically apportions cost responsibility for land acquisition to the government appears (i) to distort the national government's fiscal programming and resource allocation and (ii) to lessen government's negotiating arsenal, specifically during negotiations on toll formula, to obtain an optimal solution that ensures minimized toll fees to end-users, reasonable return to investors and minimal government support to the project.

Adverse incentives stem in the mere act of granting the franchise which assumes that government funds will invariably be made available to cover ROW costs at a schedule consistent with the grant of franchise and/or project agreements. This is important because ROW costs necessitate several millions of pesos in public funds; resources which are to be prioritized and appropriated from the national budget and which in turn impact on the public sector financial position. Although TRB may not be faulted for not fully considering the funds sourcing/programming issue in its decision processes, the absence of an effective

mechanism wherein the requirements arising from the grant of toll road franchises are beforehand integrated into government fiscal/investment programming should be looked into.

On the second observation, it may be important to point out that the mandates of the respective approving authorities, namely the TRB for joint venture agreements and the NEDA-ICC for BOT projects, may likewise be crucial factors in the determination of the toll formula and its adjustment provisions. This is because the wide array of tools available to the ICC to ensure an optimal toll road formula may not in the same way available to the TRB during the negotiations and approval process. These tools may well include guarantees, subsidies and equity contributions beyond the usual ROW acquisition cost and of which TRB may not be in a position to dispense in favor of the franchise holder.

The issue arises because negotiations between the TRB and the JV proponent predictably apportions ROW acquisition costs to the national government which need to be provided at specified time intervals without due consideration to the public fiscal position. Were the same JV proposal be subjected to ICC review, ICC would have within its mandate to counter propose that the ROW costs should be shouldered by the private sector proponent in exchange for, say, a longer concession period and/or higher returns on equity capital. It is also well within the purview of ICC to grant additional subsidy other than ROW costs to the project in order to reduce toll rates.

The downside however with the ICC approval process are the weak monitoring and institutional links in the interim periods between the ICC first pass approval of the project concept, the TRB approval of the toll road formula as well as its adjustment provisions and, the ICC second pass approval of the project contract. This is because when the ICC reviews a particular toll road proposal implemented under a BOT-type scheme, the toll adjustment formula will still be subject to TRB review. This means that the financial indicators (or even the toll adjustment formula) of the project proposal, which was an integral part in the ICC consideration of the project, may still be subject to change. This may in turn affect the traffic projections (i.e., higher toll rates discourages toll road use) and hence, economic viability (i.e., lower traffic would decrease project benefits) since elasticities associated with toll-users willingness-to-pay are likewise affected.

Even as the project contract is later submitted to the ICC for second pass approval, verification of the rate of return on equity-capital due to changes in the TRB-approved toll formula is no longer undertaken, at least according to existing procedures. Perhaps, the main reason for this is the uncertainty as to the final arbiter of toll formulas. While the approval of toll fees and adjustment formulas is within TRB's mandate, the same formulas constitute the basis for which the ICC evaluates/approves the financial merit of the tollway project. So far, ICC has not had the opportunity nor the need to cite a project toll formula for inconsistencies with the ICC approved financial indicators, causing the need for the project proponent to return to the TRB. But note that the evaluation parameters of the two approving authorities are not exactly harmonized

The "no-objection basis" approval of BOT project contracts as prescribed under the IRR of the BOT Law is another complicating issue. Some implementing agencies are of the impression that ICC recommendations amending/revising project contracts due to the "no-objection" clause are not binding. Some project contracts have consequently been signed ignoring ICC recommendations and without these agencies being aware that while there is no legal impediment to proceed with contract signing, ICC has the option to withhold national

government support/guarantees to the project in the event that the conditions of first pass approval are not met.

5.2 Issues on the Parametric Formula and Financial Evaluation

Financial evaluation, as currently being undertaken, significantly differ for the JV route and the BOT route. Financial evaluation being undertaken for the JV route does not accurately capture the financial position of the proponent as it is limited only to project IRR. While the project IRR is helpful as far as assessing the overall project viability, it is the equity IRR which is critical in negotiations with proponents, particularly with regard to the setting of toll rates and allocation of project risks. This also ensures that formulas are not arbitrary (i.e., net costs are correlated with the parametric formula). The financial IRR should be computed both from the perspectives of the entire project and the equity-owners as being done by the ICC. Without rigorous and appropriate financial analysis, it is possible to structure the toll formulas in a sub-optimal manner, which may compromise the successful outcome of the project.

The parametric formula may allow adjustments for changes in inflation and foreign exchange rates, since the government may appropriately cover these risks. Moreover, without prejudice to the early repayment of debt, the private proponent in coordination with TRB may have to structure the toll formula to smoothen the toll multipliers and escalators over time so that road-users willingness-to-pay can be considered.

While risk allocation in the parametric formula is a product of negotiation, it should generally conform to the accepted principle that risks should be shouldered by the party best able to mitigate its effect. Prior to full repayment, toll road users usually are made to shoulder foreign exchange and inflation risks. Risks associated with interest rate movements are solely borne by the proponent. After loan repayment and depending probably on the results of negotiations, inflation risk may or may not be shared by the proponent and the toll road users. It is also apparent that the various perfected parametric formulas differ in structure and in the relative treatment of variables therein. Greater precision and consistency in the definition of variables included in the formula may likewise have to be addressed. A move towards a more standardized parametric formula, looking at best practice in other countries and across other sectors may be called for.

The government guarantees the enforcement of the parametric formula. Should socio-political unacceptability hinder the full collection of the proposed toll fee, government may have to (a) subsidize the toll rate, or (b) take-over the facility (buy-out). Obtaining an optimal solution which considers minimized toll fees to end-users, reasonable return to investors and minimal government support to a toll road project is a necessity.

6.0 RECOMMENDATIONS

The institutional set-up of having two different approval processes for private sector participation in toll road development might have to be resolved. The ramifications of Department of Justice (DOJ) Opinion No. 78 s. 1993, implying that the TRB and the ICC (pursuant to the BOT Law) are both empowered to grant toll road franchises but affirming the mandate of TRB to approve toll road formulas, may have to be further studied and be made as basis of recommendations on institutional reforms.

In the interim, coordination and interface between ICC and TRB of the approval process may have to be strengthened. The government should endeavor to strengthen its evaluation processes through long-term training (especially in the areas of economic regulation, financial evaluation and auditing). For instance, the ICC and TRB may have to come up with a standard set of requirements and adopt a uniform methodology in the conduct of financial evaluation.

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