REVISITING REPUBLIC V. MERALCO, THE PUBLIC UTILITY DEFINITION, AND THE REASONABLE RATE OF RETURN*

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ABSTRACT

Per *Republic of the Philippines v. Manila Electric Co.*, administrative and judicial pronouncements have held that the reasonable rate of return for purposes of public utility regulation is 12%. This is at odds with financial economics precepts which dictate that opportunity cost or the weighted average cost of capital (WACC) should be the reference point for computing the reasonable rate of return. The Court likewise held that income taxes are not recoverable expenses for purposes of rate determination. However, financial economics principles also confirm that barring the recovery of income taxes prevents firms from obtaining a fair and reasonable rate of return where after-tax WACC is utilized for rate-setting.

The nebulous public utility definition must similarly be revisited. The legislative history of public utility regulation evinces that its rationale is to address problems caused by natural monopolies. Therefore, the industries which are classified as public utilities should be those which are considered natural monopolies.

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I. INTRODUCTION

Per *Republic of the Philippines v. Manila Electric Co.*,[1] administrative and judicial pronouncements have held that the reasonable rate of return for purposes of public utility regulation is 12%. This is at odds with financial economics precepts which dictate that opportunity cost or the weighted average cost of capital (WACC) should be the reference point for computing the reasonable rate of return.[2] The Court likewise held that income taxes are not recoverable expenses for purposes of rate determination. In cases where the relevant administrative agency computes the reasonable rate of return on an after-tax weighted cost of capital basis, barring the recovery of income taxes prevents firms from obtaining a fair and reasonable rate of return.

The nebulous public utility definition must similarly be revisited. While the legislature may define what a public utility is,[3] and has done so,[4] there remains considerable uncertainty as to the metes and bounds of the term. This ambiguity is not inconsequential—the limitations on foreign equity participation and management of public utilities stifle the influx of badly needed foreign direct investments (FDI).[5] These restrictions hamper investment because, like the United States, our domestic savings are insufficient to finance domestic investment.[6] Consequently, the Philippines

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[1] [hereinafter "*Meralco I*"], G.R. No. 141314, 391 SCRA 700 (2002).

[2] Notably, the Energy Regulatory Commission (ERC) discarded the 12% benchmark in favor of a WACC methodology as early as December 2004. ERC Res. No. 12-02 (2004), § 4.11. Guidelines on the Methodology for Setting Distribution Wheeling Rates.

[3] *See for example* Luzon Stevedoring Co. Inc. v. Pub. Serv. Comm'n, 93 Phil. 735, 743 (1953), which declares that "the public policy of the state as announced by the legislature will be given due weight[.]"; *See also* J.G. Summit Holdings, Inc. v. Court of Appeals, G.R. No. 124293, 412 SCRA 10, 27–28 (2003) (upholding legislation declassifying shipyards as public utilities).

[4] *See for example* Rep. Act No. 9136 (2001), § 29.

[5] *See* Organization for Economic Co-operation and Development (OECD), Investment Policy Reviews: Southeast Asia, March 2018, (14–15); *See also* Office of the Public-Private Partnership, *Public Private Partnership Monitor*, Asian Development Bank, Nov. 2017.

[6] *See* EDWARD GRAHAM & DAVID MARCHICK, US NATIONAL SECURITY AND FOREIGN DIRECT INVESTMENT 75–78 (2006); *See also* Gerardo P. Sicat, *Legal and Constitutional Disputes and the Philippine Economy*, 82 PHIL. L.J. 1, 20–26 (2007). *See also* Bianca Cuaresma, *ING: Savings suffer in economy dependent on consumption*, BUSINESS MIRROR, July 5, 2019, *at* https://businessmirror.com.ph/2019/07/05/ing-savings-suffer-in-economy-dependent-on-consumption/; *See also* Karl Angelo Vidal, *Record-high current account gap marks 2018*, BUSINESS WORLD, Mar. 15, 2019, *at* https://www.bworldonline.com/record-high-current-account-gap-marks-2018/.

must import savings from abroad through net capital inflows or net inward foreign direct investment.[7]

Therefore, remedial legislation is necessary to incentivize appropriate investment to improve basic services and ensure a better quality of life for all.[8]

II. HISTORY AND ECONOMIC BASES OF RATE REGULATION

Professor Epstein traced the roots of public utility regulation[9] to Sir Matthew Hale's seminal treatise—*De Portibus Maris*. Published in 1670, Hale argued that the monarchy had the right to limit the fees charged by wharves when licensed by the King or when the wharves were a natural monopoly.[10] Citing the Hale treatise, *Allnutt v. Inglis*[11] held that the London Dock Company had the duty to take all customers at a reasonable price as it was the beneficiary of a legal monopoly.[12] This concept was then adopted in the United States when the US Supreme Court in *Munn v. Illinois* upheld the imposition of maximum rates for the use of public warehouses,[13] quoting extensively from *De Portibus Maris* and *Allnutt*.[14]

As such, public utility regulation aims to constrain the abuse of monopoly power.[15] It addresses the following natural monopoly concerns:

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[7] *See* Graham, *supra* note 6, at 76.

[8] *See* Gerardo Sicat, *Philippine Economic Nationalism*, XLV PHIL. REV. OF ECON. 1, 14–26 (2008); *See also* Sicat, *supra* note 6 at 17–29.

[9] *See* Richard Epstein, *The History of Public Utility Rate Regulation in the United States Supreme Court: Of Reasonable and Nondiscriminatory Rates*, 38(3) J. OF SUP. CT. HIST. 345–68 (2013). This provides an insightful view of the history of rate regulation in the United States.

[10] *Id.* at 346. "If the king or a subject have a publick [sic] wharf, unto which all persons that come and unlade or lade their goods for the purpose, because they are wharfs only licensed by the queen, according to the statute of 1 El. Cap II, or because there is no other wharf in that port, as it may fall out where a port is newly erected; in that case there cannot be taken arbitrary and excessive duties for cranage, wharfage, [etc.,] neither can they be enhanced to an immoderate rate, but the duties must be reasonable and moderate, though settled by the king's license or charter. For now[,] the wharf and crane and other conveniences are affected with a publick [sic] interest, and they cease to be *juris privati* only[.]"; *Id.* at 347. "Note that Hale had superb instincts because he did not limit this class to firms that had legal franchises from the Crown, but also included those 'where there is no other wharf in that port, as it may fall out where a port is newly erected,' which is close to what today we call a natural monopoly."

[11] 104 Eng. Rep. 206 (K.B.) (1810).

[12] Epstein, *supra* note 9, at 350.

[13] 94 U.S. 113 (1876).

[14] Epstein, *supra* note 9, at 350–51.

[15] Epstein, *supra* note 9, at 346–51.

1) *monopoly pricing*—where the firm has the incentive to increase profits by limiting supply; 2) *encouragement of inefficient entry*—where another entrant appears and the existing firm reduces price or output. If it reduces output, average cost of production will be higher than necessary; 3) *inefficient price structure*—where if price is equal to marginal cost, total revenue is less than total cost.[16] Monopolists are required to deal with all customers on reasonable and non-discriminatory ("RAND") terms.[17] The reasonableness standard corrects monopoly pricing by capping the rate charged to the risk-adjusted rate of return on the assets committed to the business.[18] Initially, the non-discriminatory standard prevented monopolists from engaging in any price discrimination.[19] However, the prevailing view is to permit discrimination among customers within a given class.[20]

This natural monopoly rationale can be found in the records of the 1986 Constitutional Commission's deliberations where Commissioner Monsod stated:

> MR. MONSOD: Last Saturday, a phrase was introduced by Commissioner Davide in Section 15 which states: "NOR SHALL SUCH FRANCHISE, CERTIFICATE OR AUTHORIZATION BE EXCLUSIVE IN CHARACTER FOR A PERIOD OF NOT LONGER THAN TWENTY-FIVE YEARS, RENEWABLE FOR NOT MORE THAN TWENTY-FIVE YEARS." I believe his purpose was to align this with a section on the Article on Natural Resources. *The committee would like to ask for a review of this phrase because by the nature of a "public utility," it has to be exclusive most of the time. When we have a telephone company, a power company and such, we do not set up three sets of wirings for three telephone companies to be in the area. Precisely, the nature of a "public utility" is that it is a natural monopoly; otherwise, it would be too expensive for the country and for the consumers.*[21]

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[16] Richard Posner, ECONOMIC ANALYSIS OF LAW 251–54 (2nd ed. 1977).

[17] Epstein, *supra* note 9, at 348.

[18] *Id.*

[19] *Id.*

[20] Epstein, *supra* note 9, at 349. "The current view therefore tends to split the difference by allowing all forms of cost to push price discrimination, but looking with suspicion upon price discrimination driven by efforts to play favorites among customers within a given class. So it is all right to charge different fares to customers in the same class at different hours, but not to charge different customers different fares for the same service at the same time."

[21] III RECORD CONST. COMM'N. 65 (Aug. 25, 1986). (Emphasis supplied.)

The legislative history of the Public Service Act,[22] an act originating from the United States,[23] likewise supports the same. Published shortly before the promulgation of the Public Service Act and the 1935 Constitution, a treatise on public utility law in the United States cited by the Philippine Supreme Court[24] states:

> §209. Municipal public utilities natural monopolies. – Because of the very nature of the service rendered each customer can not [*sic*] provide it for himself nor purchase it independently of the other, nor from whom he pleases or with whom he might prefer to deal. The distribution of the municipal public utility service must necessarily be made from a single source, or at the most a very few sources. While a person desiring to purchase his fuel supply in the form of coal or wood may generally deal with any one of a number of independent concerns engaged in that line of business, the prospective customer, desiring heat or light in the form of gas or electricity or practically any municipal public utility service, including water, transportation, and communication, is limited in his purchase to a single market; and this must be so because of the manufacture and distribution as well as the extent of the investment necessary to provide any municipal public utility service. In other words, *the furnishing of municipal public utility service is a natural monopoly which is never accompanied by competitive conditions in theory and seldom so in practice*; because the extent of the investment necessary to provide such service is so great and the occupation of the streets in some cases is necessarily so exclusive that only a single source of supply is available, and this from the economic point of view should always be the case. The regulation and control now provided by the state commissions takes the place of competition and saves the expense of necessary duplicated service.[25]

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[22] Act No. 2307 (1914).

[23] *See* City of Manila vs. Pub. Serv. Comm'n, 52 Phil. 515, 525 (1928) which states that Act No. 2307 was derived from New Jersey Law; *See also* City of Manila vs. Manila Electric Railroad and Light Company, 36 Phil. 89, 99 (1917) (Carson, *J., dissenting*) which states that Act No. 2307 was derived from New Jersey Law; *See also* Luzon Stevedoring Co. Inc. v. Pub. Serv. Comm'n, 93 Phil. 735 (1953); *See also* Batangas Transp. Co. v. Orlanes, 52 Phil. 455 (1928). *See* The City of Manila vs. The Pub. Serv. Comm'n, 52 Phil. 515, 525 (1928) which states that Act No. 2307 was derived from New Jersey Law; *See also* The City of Manila vs. The Manila Electric Railroad and Light Co. and The Board of Pub. Util. Comm'rs, 36 Phil. 89, 99 (1917) (Carson, *J., dissenting*) (stating that Act No. 2307 was derived from New Jersey Law).

[24] *See for example Meralco*, G.R. No. 141314, 391 SCRA 700 (2002); Batangas Transp. Co. v. Orlanes, 52 Phil. 455 (1928); Ynchausti S.S. Co. v. Pub. Util. Comm'r, 44 Phil. 363 (1923).

[25] OSCAR POND, A TREATISE ON THE LAW OF PUBLIC UTILITIES, INCLUDING MOTOR VEHICLE TRANSPORTATION 259–60 (1913). (Emphasis supplied.)

Treatises are admissible as tending to prove the truth of a matter stated therein if the court takes judicial notice.[26]

Black's Law Dictionary likewise highlights that a public utility is "always a virtual monopoly."[27] Professor Joskow further notes that:

> [A]t least up until the 1930s, the courts had in mind a much less expansive notion of what constituted a "public utility" whose prices and other terms and conditions of service could be legitimately regulated by state or federal authorities [...]. The two criteria where (a) the product had to be "important" or a "necessity" and (b) the production technology had natural monopoly characteristics. Clemens argues that "[N]ecessity and monopoly are almost prerequisites of public utility status." *One could read this as saying that the combination of relatively inelastic demand for a product that was highly valued by consumers and natural monopoly characteristics on the supply side leading to significant losses in social welfare are a necessary pre-condition for permitting government price and entry regulation. An alternative interpretation is that the "necessity" refers not so much to the product itself, but rather for the "necessity of price and entry regulation" to achieve acceptable price, output and service quality outcomes when industries had natural monopoly characteristics.* In either case, until the 1930s, it is clear that the Supreme Court intended that the situations in which government price regulation would be constitutionally permissible were quite narrow.
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> > The conditions under which governments could regulate price, entry and other terms and conditions of service without violating constitutional protections were expanded during the 1930s. Since the 1930s, federal and state governments have imposed price regulation on a wide variety of industries that clearly do not meet the "necessity and natural monopoly" test discussed above—milk, petroleum and natural gas, taxis, apartment rents, insurance, etc.—without violating the Constitution. *Nevertheless, the*

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[26] *See* RULES OF COURT, Rule 130, § 46. "Learned treatises. — *A published treatise*, periodical or pamphlet *on a subject of* history, *law*, science or art *is admissible as tending to prove the truth of a matter stated therein if the court takes judicial notice*, or a witness expert in the subject testifies that the writer of the statement in the treatise, periodical or pamphlet is recognized in his profession or calling as expert in the subject." (Emphasis supplied.)

[27] Black's Law Dictionary 1232 (6th ed.): "A privately owned and operated business whose services are so essential to the general public as to justify the grant of special franchises for the use of public property or of the right of eminent domain, in consideration of which the owners must serve all persons who apply, without discrimination. *It is always a virtual monopoly.*" (Emphasis supplied.)

> *natural monopoly problem, the concept of the public utility developed in the late 19th and early 20th centuries, and the structure, rules and procedures governing state and federal regulatory commissions that are responsible for regulating industries that meet the traditional public utility criteria go hand in hand.* [28]

This natural monopoly element was similarly discussed in *Batangas Transportation Co. vs. Orlanes*:

> *The policy of regulation, upon which our present public utility commission plan is based and which tends to do away with competition among public utilities as they are natural monopolies, is at once the reason and the justification for the holding of our courts that the regulation of an existing system of transportation, which is properly serving a given field or may be required to do so, is to be preferred to competition among several independent systems.* While requiring a proper service from a single system for a city or territory in consideration for protecting it as a monopoly for all the service required and in conserving its resources, no economic waste results and service may be furnished at the minimum cost. *The prime object and real purpose of commission control is to secure adequate sustained service for the public at the least possible cost, and to protect and conserve investments already made for this purpose. Experience has demonstrated beyond any question that competition among natural monopolies is wasteful economically and results finally in insufficient and unsatisfactory service and extravagant rates.* [29]

A potential corollary is that firms serving markets which are not natural monopolies[30] should not be considered public utilities. Interestingly, Professor Serafica observed that a natural monopoly did not exist in the Philippine telecommunications sector.[31] Similarly, U.S. Seventh Circuit Chief Judge Posner expressed doubts as to whether motor trucking and air

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[28] Paul Joskow, *Regulation of Natural Monopoly*, *in* HANDBOOK OF LAW AND ECONOMICS 1227, 1264–65 (A. Mitchell Polinsky & Steven Shavell eds., 2007). (Emphasis supplied, citations omitted.)

[29] Batangas Transp. Co. v. Orlanes, 52 Phil. 455, 471 (1928). (Emphasis supplied.)

[30] *See* JEFFREY CHURCH & ROGER WARE, INDUSTRIAL ORGANIZATION: A STRATEGIC APPROACH 757, 764 (2000); Joskow, *supra* note 28 at 1248–1255. This discusses the natural monopoly rationale and the subadditivity requirement.

[31] *See* Ramonette Serafica, *Was PLDT a Natural Monopoly?: An Economic Analysis of Pre-reform Philippine Telecoms*, 22 TELECOMM. POLICY 359–370, 369 (1998). This concludes that natural monopoly properties did not exist in PLDT's provision of toll and local telephone services.

transportation were natural monopolies, seeing these aberrations as the result of bargaining by special interest groups.[32]

III. REASONABLE RATE OF RETURN, THE DUE PROCESS CLAUSE, AND CONSUMER WELFARE

The rate-setting process is subject to procedural and substantive due process constraints. In the *Minnesota Rate Cases*,[33] a statute was struck down on procedural due process grounds as the rate setting commission's enabling statute did not provide for judicial review of its rate determination or any hearing where it could set out the grounds for its decision.[34] In contrast, substantive due process requires the grant of a reasonable rate of return.[35] The failure to do so constitutes the taking of property without due process of law.[36] A just and reasonable rate should ensure that "the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks" and "sufficient to assure confidence in the

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[32] Posner, *supra* note 16, at 267–68.

[33] 134 U.S. 418 (1890).

[34] Epstein, *supra* note 9, at 352–53.

[35] Epstein, *supra* note 9, at 355. "[T]he constitutional connection between confiscation and the Due Process Clause was enforced, chiefly through the efforts of Justice John Marshall Harlan. The theme is evident in the 1896 case of *Covington & Lexington Turnpike Road Co. v. Sandford*, where Justice Harlan put the key inquiry as 'whether the legislature has, under the guise of regulating rates, exceeded its constitutional authority, and practically deprived the owner of property without due process of law.' Later that year in *Chicago, Burlington & Quincy Railroad v. City of Chicago*, he tightened the noose by drawing the explicit connection between takings and due process by equating 'without due process of law' with 'without just compensation': '[a] judgment of a state court, even if authorized by statute, whereby private property is taken for public use, without compensation made or secured to the owner, is, upon principle and authority, wanting in the due process of law required by the Fourteenth Amendment of the Constitution of the United States.'"

[36] *See* Duquesne Light Co. v. Barasch, 488 U.S. 299, 307 (1989). "The guiding principle has been that the Constitution protects utilities from being limited to a charge for their property serving the public which is so 'unjust' as to be confiscatory. Covington & Lexington Turnpike Road Co. v. Sandford, 164 U.S. 578, 597 (1896) (A rate is too low if it is 'so unjust as to destroy the value of [the] property for all the purposes for which it was acquired,' and in so doing 'practically [488 U.S. 299, 308] deprive[s] the owner of property without due process of law'); FPC v. Natural Gas Pipeline Co., 315 U.S. 575, 585 (1942) ('By long standing usage in the field of rate regulation, the 'lowest reasonable rate' is one which is not confiscatory in the constitutional sense'); FPC v. Texaco Inc., 417 U.S. 380, 391–392 (1974) ('All that is protected against, in a constitutional sense, is that the rates fixed by the Commission be higher than a confiscatory level'). If the rate does not afford sufficient compensation, the State has taken the use of utility property without paying just compensation and so violated the Fifth and Fourteenth Amendments."

financial integrity of the enterprise, so as to maintain its credit and to attract capital."[37]

While there are various rate-setting methodologies, the regulator need not rigidly stick to a particular formula. If the "total effect" of the rate order cannot be said to be unjust and unreasonable, then infirmities in the method employed to reach that result are unimportant.[38] However, the regulator cannot arbitrarily switch between methodologies such that investors bear the risk of bad investments and are denied the benefit of good investments.[39]

Ensuring reasonable rates of return is demanded, not only by due process norms, but also by consumer welfare principles.[40] In an article which

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[37] Federal Power Commission v. Hope Natural Gas Co., 320 U.S. 591, 603 (1944).

[38] *Id.* at 602. "We held in Federal Power Commission v. Natural Gas Pipeline Co., supra, that the Commission was not bound to the use of any single formula or combination of formulae in determining rates. Its rate-making function, moreover, involves the making of 'pragmatic adjustments.' [.] And when the Commission's order is challenged in the courts, the question is whether that order 'viewed in its entirety' meets the requirements of the Act [...] . Under the statutory standard of 'just and reasonable' it is the result reached not the method employed which is controlling [.] It is not theory but the impact of the rate order which counts. If the total effect of the rate order cannot be said to be unjust and unreasonable, judicial inquiry under the Act is at an end. The fact that the method employed to reach that result may contain infirmities is not then important. Moreover, the Commission's order does not become suspect by reason of the fact that it is challenged. It is the product of expert judgment which carries a presumption of validity. And he who would upset the rate order under the Act carries the heavy burden of making a convincing showing that it is invalid because it is unjust and unreasonable in its consequences."

[39] *See* Duquesne Light Co. v. Barasch, 488 U.S. 299, 315 (1989). "The risks a utility faces are in large part defined by the rate methodology because utilities are virtually always public monopolies dealing in an essential service, and so relatively immune to the usual market risks. Consequently, a State's decision to arbitrarily switch back and forth between methodologies in a way which required investors to bear the risk of bad investments at some times while denying them the benefit of good investments at others would raise serious constitutional questions."

[40] *See* W. KIP VISCUZI, JOSEPH HARRINGTON & JOHN VERNON, ECONOMICS OF REGULATION AND ANTITRUST 568 (2005 ed.). "[I]f a firm is forced to serve unprofitable markets, it is likely to have a difficult time earning at least normal profits. This can result in long-run problems through its effect on investment. If some investment is financed internally, reduced profits decrease the amount of capital formation. Such a deterioration is likely to be myopic from society's long-run perspective [.]"; *See also* Mark Armstrong & David E. M. Sappington, *Recent Developments in the Theory of Regulation*, *in* III HANDBOOK OF INDUSTRIAL ORGANIZATION 1557, 1631–32 (Mark Armstrong and Robert Porter eds., Dec. 2007). "Once the firm has made irreversible investments, a regulator with limited commitment powers may choose not to compensate the firm for those investments, in an attempt to deliver the maximum future benefits to consumers. This expropriation might take the form of low mandated future prices. Alternatively, the expropriation might arise in the form of permitting entry into the industry. When it anticipates expropriation of some form, the firm will typically undertake too little investment."

examined the effects of disallowing investments previously included in the rate bases of United States electric utilities,[41] Lyon and Mayo concluded that regulatory cost disallowances result in lower future investments both by the operator subject of the disallowance and by other operators within the same state.[42] Troesken details how bribes and onerous regulations raises operating costs and discourages investments in utilities.[43] In the case of water utilities, this underinvestment has caused serious public health risks.[44] Moreover, misplaced regulatory opportunism increases variability in returns and results in investors demanding higher rates of return to the detriment of consumers.[45]

IV. OVERVIEW OF RATE-SETTING METHODOLOGIES

The typical rate case in the United States consists of two phases. The first phase determines the *total revenue requirement* or *total cost of service* of the public utility.[46] The second phase is the *rate design* or *tariff structure* phase. In the latter phase, the actual prices that will be charged for different quantities consumed or to different types of consumers or for different products is determined.[47] The earliest rate-setting method is the Return On Rate Base methodology ("RORB"), otherwise known as "Cost of Service Regulation."[48]

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[41] Thomas Lyon & John Mayo, *Regulatory Opportunism and Investment Behavior: Evidence from the U.S. Electric Utility Industry*, 36 RAND J. OF ECON. 628–44 (2005).

[42] *Id.* at 629.

[43] Werner Troesken, *Regime Change and Corruption. A History of Public Utility Regulation, in* CORRUPTION AND REFORM: LESSONS FROM AMERICA'S ECONOMIC HISTORY 272 (Edward L. Glaeser & Claudia Golden eds., 2006): "Once local politicians acquired the ability to regulate utility rates unilaterally, they abused that authority to win election or extort bribes from private utility companies. This raised the costs of operating private utilities and discouraged future investment in utility industries. As Troesken (1996, pp. 74–76) shows, the implementation of municipal regulation of gas rates in Chicago was associated with a slowdown in investments in new gas lines in the city. Other studies show that onerous municipal regulations discouraged capital formation in the gas and water industries throughout the United States (Troesken 1997; Troesken and Geddes 2003). In the case of water, underinvestment posed serious public health risks, leaving cities vulnerable to epidemics of typhoid, cholera, and diarrheal diseases (Troesken 2001)."

[44] *Id.*

[45] *See* Gioia Pescetto, *Regulation and Systematic Risk: The Case of the Water Industry in England and Wales*, 18 APPLIED FINANCIAL ECONOMICS 61, 71 (2008): "Overall the results reveal some important issues. Firstly, individual regulatory announcements do often affect systematic risk. This confirms the existence of an implicit relationship in regulation, namely that while the market evaluation of systematic risk informs the regulatory parameters, in turn regulation affects risk."

[46] Joskow, *supra* note 28, at 1288.

[47] *Id.*

[48] Viscuzi, *supra* note 40, at 430; Church, *supra* note 30, at 841.

Republic of the Philippines v. Manila Electric Co. briefly discussed this methodology in evaluating whether the respondent's rates were just and reasonable, *viz.*:

> In determining the just and reasonable rates to be charged by a public utility, three major factors are considered by the regulating agency: a) rate of return; b) rate base and c) the return itself or the computed revenue to be earned by the public utility based on the rate of return and rate base. [49]

The essence of RORB methodology is captured by the equation below:[50]

Revenue = Expenses + (Rate Base x Allowed Rate of Return)

The rate base in the RORB equation may be estimated in various ways: 1) Replacement Cost—assets of firm are valued based on the current cost to replace them; 2) Short-Run Opportunity Cost ("SROC")—the value of a firm's assets is determined by their next best alternative use; and 3) Historic Cost—the firm's assets are valued at original cost less depreciation. It is typical to use Historic Cost to guard against expropriation of capital (e.g. SROC). However, using replacement cost may send more accurate cost signals to consumers and encourage efficiency.[51]

As regards the rate of return component of the RORB equation, basic financial economics precepts dictate that investment decisions be made by comparing the rate of return on the investment project to the opportunity cost of investing in similarly risky investments.[52] If the firm's proposed investments offer higher rates of return than the shareholders themselves can earn by making other investments, then management should invest in the project. On the other hand if the firm's proposed investments offer higher rates of return than shareholders themselves can earn by making other investments, then management should vote to cancel the project. If management fails to adhere to this basic precept, the stock price of the firm will fall and its stockholders will demand their money back so they can invest it elsewhere.[53] For typical investments of a firm, this opportunity cost is the Weighted Average Cost of Capital ("WACC"):[54]

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[49] *Meralco I*, G.R. No. 141314, 391 SCRA 700, 709 (2002).

[50] *See* Viscuzi, *supra* note 40, at 430; Church, *supra* note 30, at 841.

[51] Church, *supra* note 30, at 844.

[52] *See* Richard Brealey, Stewart Myers, Franklin Allen, PRINCIPLES OF CORPORATE FINANCE 9, 24–25 & 221–25 (12th ed).

[53] *Id.* at 24–25.

[54] *Id.* at 221–25.

$$WACC_{Post\text{-}tax} = r_D(1- T_C)\frac{D}{V} + r_E\frac{E}{V}$$

D ≡ Market value of firm's debt
E ≡ Market value of firm's equity
V = D + E ≡ Total market value of the firm
r_D ≡ Cost of debt before taxes
r_E ≡ Cost of equity before taxes
T_C ≡ Marginal corporate tax rate

In the WACC formula, the cost of debt is usually the market interest rate on its existing debt,[55] while the cost of equity is typically computed using the Capital Asset Pricing Model ("CAPM"),[56] with a subgroup of regulators using other methodologies such as arbitrage pricing theory, Fama-French 3-factor model, and the dividend growth model.[57] Notably, CAPM was "the approach most commonly used by regulators outside the United States" and, despite its drawbacks "was the most robust methodology available."[58] According to CAPM, the risk premium on firm *i's* common stock is equal to the product of beta and the market risk premium[59] or:

$$r_i - r_f = \beta_i(r_m - r_f)$$

r_m ≡ expected market return
r_f ≡ risk-free rate
$\beta_i = \frac{\sigma_{im}}{\sigma_m^2}$

where:
σ_{im} ≡ covariance of stock i's return and the market return
and
σ_m^2 ≡ variance of market return

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[55] *Id.* at 493. It advises the use of an up-to-date interest rate (yield to maturity) instead of the the interest rate when the firm's debt was first issued or the coupon rate on the debt's book value.

[56] *Id.* at 225–27.

[57] Independent Pricing and Regulatory Tribunal (New South Wales), *Review of method for determining the WACC* 49 (Dec. 2012); *See generally* Brealey et al., *supra* note 52, at 206–10.

[58] Independent, *supra* note 57, at 49.

[59] Brealey et al., *supra* note 52, at 183, 200, 211, 225–27.

Regulators differ on how to compute the above elements. For example, the Independent Pricing and Regulatory Tribunal notes that risk free rate is computed using a 20-day averaging period and a 5-year maturity period,[60] while the cost of equity is primarily computed using CAPM and long-term historical estimates of the market risk premium (See Tables 1 and 2).[61]

Regulator	**Risk Free Rate Averaging Period**	**Term to Maturity**
Independent Pricing and Regulatory Tribunal (IPART)	20-day average	5-year Commonwealth Government Bond (CGB)
Australian Energy Regulator (AER)	20-day average	10-year CGB
Electricity Regulatory Authority (ERA)	20-day average	5-year CGB for Dalrymple Natural Gas pipeline; 10-year CGB for 2008 freight/urban railway networks
Queensland Competition Authority (QCA)	20-day average	5-year CGB
Essential Services Commission (ESC)	40-day average	10-year CGB
Essential Services Commission of South Australia (ESCOSA)	20-day average	10-year CGB
Office of Gas and Electricity Markets – Great Britain (Ofgem GB)	10-year trailing average	10-year index-linked gilts
Water Services Regulation Authority – Great Britain (Ofwat GB)	10-year trailing average	5 & 10-year index-linked gilts
New Zealand Commerce Commission (NZCC)	Linearly interpolated annualized daily data by Bloomberg	5-year NZGB
Netherlands Competition Authority (NMa)	2 or 5-year trailing average	10-year government bonds

TABLE 1. Cost of Debt Approach by Other Regulators

[60] Independent, *supra* note 57, at 23.

[61] Independent, *supra* note 57, at 44–48.

Regulator	Averaging periods	Model selection
IPART	20-day average risk free rate with long-term historical estimate of the MRP	CAPM
AER	20-day average risk free rate with long-term historical estimate of the MRP	CAPM
ERA (WA)	20-day average risk free rate with long-term historical estimate of the MRP for Western Power determination and 2008 determination for freight and urban railways	CAPM
QCA	20-day average risk free rate with MRP estimate based on 4 methodologies including historical data and current data methodologies	CAPM
ESC	20-day average risk free rate and historical MRP	CAPM
ESCOSA	20-day average risk free rate and historical estimates of the MRP. ESCOSA's use of historic MRP is consistent with a study by Bishop, Fitzsimmons and Officer.	CAPM
Ofgem (GB)	Ofgem base its MRP range on long-term historical estimates (Dimson, Marsh and Staunton, 2011) and short-term forward looking implied estimates (Bank of England).	CAPM but sense-check against alternative approaches, information from transactions and regulatory precedent.
Ofwat (GB)	Long-term averaging period and long-term ERP based on Dimson *et al.*	CAPM but other model could eb used as cross checks such as, Fama-French, DGM, market-to-asset ratios and really checking.
NZCC (New Zealand)	*Ex post* techniques adjusted for trends in price/dividend ratios is the starting point. *Ex ante* (forward looking) estimates are used as cross checks, but the NZCC uses its judgment	Simplified Brennan-Lally CAPM
NMa (Netherlands)	NMa uses historically realized *(ex post,* as well as expectations of the *ex ante* market risk premium and the risk free rate.	CAPM

TABLE 2. Cost of Equity Approach by Other Regulators

The RORB methodology has been criticized as promoting inefficiency, with the best-known critique termed the Averch–Johnson effect.[62] As stated by Professors Averch and Johnson, the RORB methodology creates a disincentive to hold down operating costs which are generally passed on in higher prices, and gives rise to a perverse incentive to over-expand the asset base since profits are expressed as a return on assets.[63] To address these concerns, other rate-setting methodologies were created. For example, Incentive Regulation put incentives in place for regulated firms to act more efficiently and meet performance metrics.[64] An example of this rate-setting methodology is Price Cap Regulation,[65] illustrated by the following equation:

$$\Delta PCI_t = P_t - X_t + Z_t$$

$\Delta PCI_t \equiv$ Price cap index growth rate for time t
$P_t \equiv$ Inflation factor for time t (e.g. retail price index or consumer price index)
$X_t \equiv$ Adjustment in price cap index for expected productivity improvements for time t
$Z_t \equiv$ Adjustment in price cap index for factors other than inflation and Productivity for time t

First implemented in the United Kingdom,[66] Price Cap Regulation mitigates the disadvantages of RORB by allowing the regulated utility to retain efficiency gains that drive costs below capped rates, thereby creating incentives to increase efficiency. Price caps are combined with price escalation clauses (e.g. CPI) and targets for efficiency increases over the regulatory period (i.e. X-factor). The benefits from efficiency gains do not remain with the regulated utility but benefit consumers directly.[67] The utility can increase profits by reducing costs by an amount greater than the efficiency factor.

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[62] Harvey Averch & Leland L. Johnson, *Behavior of the Firm under Regulatory Constraint*, 52 AM. ECON. REV. 1052 (1962); Viscuzi, *supra* note 40, at 433–36.

[63] Averch et al., *supra* note 62, at 1068.

[64] *See* Viscuzi, *supra* note 40, at 436.

[65] *See* SUBHES BHATTACHARYYA, ENERGY ECONOMICS: CONCEPTS, ISSUES, MARKETS AND GOVERNANCE 665 (2011); *See also* Viscuzi, *supra* note 40, at 439; *See also* Church, *supra* note 30, at 853–55 (2000); *See for example*, ERC Res. No. 12-02 (2004) and ERC Res. No. 38-2006, Rule 20. ERC Rules of Practice and Procedure.

[66] David Parker, *Regulating Public Utilities: What other Countries can Learn from the UK Experience*, 1 PUB. MGM'T: INT'L J. RES. & THEORY 94, 109 (1999).

[67] Burkhard Pedell, REGULATORY RISK AND THE COST OF CAPITAL: DETERMINANTS AND IMPLICATIONS FOR RATE REGULATION 18 (Springer, 2006).

However, periodic reviews of the price cap are needed as prices diverge from costs over time.[68]

Another form of incentive regulation is Yardstick Regulation. It assumes that a regulator can use information on the performance of regulated firms serving distinct markets to lead to an efficient solution in other markets.[69] Critics, however, note the difficulty of finding truly comparable utilities because of current market conditions and past investment decisions.[70]

V. THE FALLACIES OF REPUBLIC OF THE PHILIPPINES V. MERALCO

Republic v. Manila Electric Co.[71] (hereinafter "*Meralco I*") expounded on the rate-setting methodology for public utilities:

> In determining the just and reasonable rates to be charged by a public utility, three major factors are considered by the regulating agency: a) rate of return; b) rate base and c) the return itself or the computed revenue to be earned by the public utility based on the rate of return and rate base. The rate of return is a judgment percentage which, if multiplied with the rate base, provides a fair return on the public utility for the use of its property for service to the public. *The rate of return of a public utility is not prescribed by statute but by administrative and judicial pronouncements. This Court has consistently adopted a 12% rate of return for public utilities.* The rate base, on the other hand, is an evaluation of the property devoted by the utility to the public service or the value of invested capital or property which the utility is entitled to a return.
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> * * *
>
> In determining whether or not a rate yields a fair return to the utility, the operating expenses of the utility must be considered. The return allowed to a public utility in accordance with the prescribed rate must be sufficient to provide for the payment of such reasonable operating expenses incurred by the public utility in the provision of its services to the public. Thus, the public utility is allowed a return on capital over and above operating expenses. However, only such expenses and in such amounts as are reasonable for the efficient operation of the utility should be

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[68] Parker, *supra* note 66, at 109.
[69] Viscuzi, *supra* note 40, at 442.
[70] *Id.*
[71] *Meralco*, G.R. No. 141314, 391 SCRA 700 (2002).

> allowed for determination of the rates to be charged by a public utility.[72]

While *Meralco I's ratio decidendi* centred on the disallowance of operating expenses in computing the fair return, and the proper valuation of the rate base,[73] its rate-setting exposition noted that administrative and judicial pronouncements found a 12% rate of return to be reasonable.[74] For this proposition, the Court cited *Manila Electric Co. v. Public Service Commission*[75] (hereinafter "Meralco II"). To the extent that this *obiter dictum* may be misconstrued as authority for a static 12% rate of return, legal advocates should tread carefully. Firstly, per *Meralco II's* footnotes:

> According to Spur:
>
> > *Many factors are taken into consideration in determining the reasonableness of the return.* Having fixed the rate based (sic) and found the cost of operation, the next question is related to the percentage of rate of return. Whether a particular percentage or rate is reasonably depends upon numerous considerations, the most frequently mentioned being the risks to which the principal and income from it are subjected, whether these risks be moral or physical or otherwise, the uniformity and certainty of the return, the character of the business, the locality in which it is placed, the density of population, whether competition exists, the returns secured in the locality from other investments of a similar nature whether the return is gross or net, for example, whether it is clear of taxes or other expenses, the necessity of obtaining money to provide good service, the size and comparative financial strength of the company, the ability of the company to borrow money, the demand for money, the prevailing rate of interest in the community in which the enterprise is located, the desirability of attracting capital, the necessity of providing surplus for contingencies, the competency of the management, the advisability of regarding superior management, the character of service rendered, the previous financial history of the company, whether it has been poor or prosperous and the market value of money.
>
> It is said that the question of the reasonableness of the return cannot be determined without reference to the interest of the public; that the value of the service and the financial condition of

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[72] *Id.* at 709–10. (Emphasis supplied.)

[73] *Id.* at 710.

[74] *Id.* at 709, *citing* Manila Elec. Co. v. Pub. Serv. Comm'n, G.R. No. 24762, 18 SCRA 651, 665–66 (1966).

[75] G.R. No. 24762, 18 SCRA 651, 665–66 (1966).

> locality served must be taken into account. *It is held that no one element is sufficient in itself, but that all enter as governing factors in the problem; that there is no inflexible rule as to the rate of return to be allowed, each case depending upon its own circumstances*[.][76]

Notably, *Meralco II's* citations concede that the rate of return computation takes into account multiple variables—a matter fundamentally at odds with a static rate of return framework. Moreover, this static concept is at odds with well-established precepts in financial economics and public utility regulation. Its premise is that public utilities are equally risky regardless of industry and capital structure and, as such, are entitled to equal rates of return. Fundamental finance concepts dictate that the opportunity cost of capital is the reference point for investments and varies with risk.[77] Moreover, the due process clause requires that "the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks" and "sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital."[78] As applied to public utility regulation, the rate of return should be based on the WACC of the regulated firm. Depending on the riskiness of the investment, the reasonable rate may be below or above 12%.[79] As such, applying a fixed 12% rate results in windfall profits to public utilities should the WACC be lower than the benchmark, and underinvestment should the WACC be higher than the benchmark. Neither situation is optimal from a consumer standpoint. These consequences were noted in *Manila Electric Co. v. Public Service Commission*, *viz.*:

> With respect to the return allowable to the MERALCO it is urged that the rate authorized by the PSC is higher than that prevailing in the United States. It is well settled, however, that the rate of return permissible depends upon existing conditions. In the Philippines, our decisions have consistently adopted the 12% rate for public utilities and the PSC has done no more than adhere to the established jurisprudence thereon. Indeed, the GAO report concedes that 12% is the fair rate of return for the MERALCO. This is not the proper occasion to inquire into the wisdom of such jurisprudence although *it is a matter of common knowledge that the*

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[76] *Id.* at 665 n.12 *citing* Guiding Principles of Public Service Regulation, by Henry C. Spur, 1926 ed., Vol. III, p. 43 et seq. (Emphasis supplied.)

[77] *See* JOÃO AMARO DE MATOS, THEORETICAL FOUNDATIONS OF CORPORATE FINANCE 14–15 (2001); *See* Brealey, *supra* note 52 at 221–25.

[78] Federal Power Comm'n v. Hope Natural Gas Co., 320 U.S. 591, 603 (1944).

[79] *See* JOHN FALLON & MICHAEL CUNNINGHAM, ECONOMIC INSIGHTS PTY LTD., *REGULATORY PRECEDENTS FOR SETTING THE WACC WITHIN A RANGE* (2014); *See also* Independent, *supra* note 57.

> *prevailing rates of interest on loans in the Philippines are generally higher than those charged in the United States. The fact is that, in view of this circumstance, nobody would lend the necessary funds to the MERALCO, if its returns were fixed at a lower rate. The reason is obvious: capitalists would prefer to lend their resources to other public utilities, because the latter would, generally, be in a better position to pay a higher rate of interest and offer a greater assurance of stability and capacity to meet its obligations, all other things being equal.*
>
> Then, also, the interest due to the lenders would have to be paid by the MERALCO out of its net earnings. As a consequence, the same would have to be somewhat higher than otherwise, in order that the borrower could reasonably warrant to the lender its (borrower's) ability to pay the debt, and still retain a margin of earnings sufficient to encourage or justify its borrower's investment in the enterprise. *Otherwise, the stockholders of the public utility would prefer, either to withdraw their investment and shift the same to another more profitable venture, or to refrain, at least for the time being from embarking on a program of replacement of its old lines, installations, equipment and other facilities, as well as of expansion and improvement of his services. In either case, the public would suffer thereby.* [80]

This error is further evinced by publicly available cost of capital computations of public utilities throughout the world (See Table 3).[81] These estimates make patently clear that cost of capital is not a static concept but is heavily dependent on the relative risk of the investment.

Country **Regulator, Regulatory Period**	**Sector**	**mid-point**	**Basis points to uplift to mid-point**
Ofgem 2013-21	Electricity Transmission	7.78	16.5
Ofgem 2013-21	Gas Transmission	7.69	7.7
Ofwat, 2010-15	Water & sewerage	7.64	87.8
United States			
Federal Communications Commission (FCC), 1990 to date	Local exchange carriers	mid-point not available	75th percentile
FCC, 2014 to reset	Telecommunications universal service fund	7.84	66

[80] Manila Elec. Co. v. Pub. Serv. Comm'n, G.R. No. 24762, 18 SCRA 651, 664–67 (1966). (Emphasis supplied.)

[81] Fallon, *supra* note 79, at v–viii.

Federal Energy Regulatory Commission (FERC), 2011-reset	Electricity Transmission	Median for individual, mid-point for group	Uplifts for certain investment incentives
FERC, continuing practice	Gas pipelines	Median	None
California, 2013-15	Elec. & gas dist (4 companies)	7.63, 7.78, 7.90, 7.96	16.0, 12.5, 12.5, 14
District of Columbia, 2012-	Electricity dist.	8.03	None

TABLE 3. Cost of Capital Computations of Public Utilities in the World

As regards the issue of whether income taxes should be recoverable expenses for rate-setting purposes, *Meralco I* upheld the Energy Regulatory Board's ruling, *viz.*:

> [O]nly such expenses and in such amounts as are reasonable for the efficient operation of the utility should be allowed for determination of the rates to be charged by a public utility.
>
> *The ERB correctly ruled that income tax should not be included in the computation of operating expenses of a public utility. Income tax paid by a public utility is inconsistent with the nature of operating expenses. In general, operating expenses are those which are reasonably incurred in connection with business operations to yield revenue or income[. . .] As correctly put by the ERB, operating expenses "should be a requisite of or necessary in the operation of a utility, recurring, and that it redounds to the service or benefit of customers."*
>
> Income tax, it should be stressed, is imposed on an individual or entity as a form of excise tax or a tax on the privilege of earning income. In exchange for the protection extended by the State to the taxpayer, the government collects taxes as a source of revenue to finance its activities. *Clearly, by its nature, income tax payments of a public utility are not expenses which contribute to or are incurred in connection with the production of profit of a public utility.* Income tax should be borne by the taxpayer alone as they are payments made in exchange for benefits received by the taxpayer from the State. No benefit is derived by the customers of a public utility for the taxes paid by such entity and no direct contribution is made by the payment of income tax to the operation of a public utility for purposes of generating revenue or profit.[82]

[82] *Meralco*, G.R. No. 141314, 391 SCRA 700, 710–11 (2002). (Emphasis supplied.)

On this point, the author respectfully disagrees. Basic financial economics precepts dictate that investment decisions be made by comparing the rate of return on the investment project to the opportunity cost of investing in similarly risky investments.[83] This opportunity cost is measured by calculating the Weighted Average Cost of Capital (WACC).[84] However, WACC can be computed on a pre-tax or after-tax basis.[85] In a world where no taxes exist, the firm's cost of capital remains the same regardless of leverage. However, where after-tax WACC is used, companies may receive a tax shield on interest payments such that the WACC decreases as debt payments increase. As such, most firms use after-tax WACC as their reference point for investment decisions.[86] These investment decisions based on after-tax WACC assume an expected rate of return after taxes. In these cases, it is typical for the regulator to include income taxes to compute the firm's revenue requirements or cost of service for rate-setting purposes.[87] For example, Professor Joskow provides the following formula, denoting income taxes as *(1 + t)*:[88]

$$R_t = OC_t + D_t + r(1+t)RAV + F_t$$

where:

$R_t \equiv$ Firm's total revenue requirements or cost of service in year t

$OC_t \equiv$ Operating costs (e.g. fuel, labor, materials and supplies)

$D_t \equiv$ Annual amount of depreciation on the regulatory rate base

$r \equiv$ Allowed rate of return on the regulatory asset base[89]

$t \equiv$ Income tax rate on the firm's gross profits

$RAV \equiv$ Value of the firm's "regulatory asset base" or its "rate base"

$F_t \equiv$ Other costs (e,g. property taxes, franchise fees)

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[83] *See* Brealey, *supra* note 52, at 24–25 & 221–25.

[84] *Id.* at 221–25.

[85] *Id.* at 445 & 452.

[86] *Id.* at 225 & 452.

[87] *See* DELOITTE CENTER FOR ENERGY SOLUTIONS, REGULATED UTILITIES MANUAL: A SERVICE FOR REGULATED UTILITIES 8 (2004). "By comparing the required rate of return with the net operating income realizable at current rates, the net operating income surplus or deficiency can be determined. This amount, adjusted for income tax and other factors is then converted to a gross revenue surplus or deficiency in order to determine the required rate increase or decrease."; *See also* Pedell, *supra* note 67 at 189–191. "[A] clear alternative would be to use the post-tax WACC and include absolute tax payments in the calculation of regulated rates[.]"

[88] Joskow, *supra* note 28 at 1288.

[89] Mistakenly listed as "s" by Joskow.

Bhattacharyya similarly includes income taxes in discussing the rate of return regulation formula:[90]

$$\sum_{i=1}^{n} P_i Q_i = \text{Expenses} + (s * RB)$$

where:
$P_i \equiv$ Price of the ith good
$Q_i \equiv$ Quantity of the ith good
$n \equiv$ Number of goods
$s \equiv$ Rate of return on investment
$RB \equiv$ Rate base
Expenses=E+D+T ; where
$E \equiv$ Operating expenses, including cost of inputs, remuneration for labor and other administrative costs
$D \equiv$ Depreciation expenses
$T \equiv$ Taxes on income and other taxes

Notably, this rate of return is not obtained if recovery of income taxes is disallowed in the rate-setting process. As Professor Valderrama rightly argues:

> [C]ompanies need to generate sufficient revenues to cover all costs they incur and payments they need to make in relation to the business as well as provide a sufficient net return to their investors to compensate the latter for the risk their capital was subjected to. *If CIT is not considered as recoverable expenditure and investors are not given a return sufficient to cover the business' tax obligation plus their risk-adjusted net return (i.e., a fully pre-tax WACC or ADR), then the latter receive less than their required or "fair" rate of return as represented by their approved WACC/ADR.*[91]

From the foregoing, it is apparent that *Meralco I* creates perverse disincentives to investment in rate-regulated industries—disincentives which are especially problematic when investments to close the infrastructure gap are critical.[92]

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[90] Bhattacharya, *supra* note 65, at 650 & 652.

[91] *See* Helena Valderrama, Corporate Income Taxes and Utility Rates in the Philippines, Lecture delivered at the BSP-UP Professorial Chair Lectures, *Bangko Sentral ng Pilipinas*, Malate, Manila (Oct. 19–20, 2015). (Emphasis supplied.)

[92] *See Asia infrastructure needs exceed $1.7 trillion per year, double previous estimates*, ASIAN DEVELOPMENT BANK WEBSITE, Feb. 28, 2007, *at* https://www.adb.org/news/asia-

VI. A SAMPLE WACC CALCULATION

The formulas for post-tax WACC and CAPM are as follows:[93]

$$WACC_{Post\text{-}tax} = r_D(1- T_C)\frac{D}{V} + r_E\frac{E}{V}$$

$$r_i - r_f = \beta_i(r_m - r_f)$$

It follows that the expected rate of return on a firm's common stock is: $r_i = r_f + \beta_i(r_m - r_f)$. Assume that $(r_m - r_f)$ is 10% in the case of the Philippines and r_f is 5%. Assuming β_I of 1.5, then $r_I = 5\% + 1.5(10\%) = 20\%$.

Suppose that firm *i*'s capital structure is composed of bank debt of PHP 100M, with an 8% interest rate per annum, and common equity with a market value of PHP 100M. Assume a corporate income tax rate of 30%. In this case, the post-tax WACC is:

$$WACC_{Post\text{-}tax} = \left[\frac{D}{E+D} * r_D * (1-t)\right] + \left(\frac{E}{E+D} * r_E\right)$$

$$= \left[\frac{100}{200} * 0.08 * (1-0.3)\right] + \left(\frac{100}{200} * 0.2\right)$$

$$= 0.028 + 0.1 = \mathbf{12.8}\%$$

On the other hand, if β_I is 1.0, then $r_I = 5\% + 1.0(10\%) = 15\%$. Assuming the same capital structure and income tax rate, the post-tax WACC would be:

$$WACC_{Post\text{-}tax} = \left[\frac{D}{E+D} * r_D * (1-t)\right] + \left(\frac{E}{E+D} * r_E\right)$$

$$= \left[\frac{100}{200} * 0.08 * (1-0.3)\right] + \left(\frac{100}{200} * 0.15\right)$$

$$= 0.028 + 0.075 = \mathbf{10.3}\%$$

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infrastructure-needs-exceed-17-trillion-year-double-previous-estimates; Naveen Tahilyani et al., *Asia's $1 trillion infrastructure opportunity*, MCKINSEY & CO. WEBSITE, March 2011, *at* https://www.mckinsey.com/industries/private-equity-and-principal-investors/our-insights/asias-1-trillion-infrastructure-opportunity.

[93] *See* Brealey, *supra* note 52, at 224 & 228.

VII. CONCLUSION

The public utility definition draws life from the natural monopoly rationale. As such, the public utility term should be limited to sectors which are natural monopolies. This would mitigate the sedative effects of the ambiguous public utility definition and would help address the acute need for infrastructure investment. Moreover, *Meralco I's obiter dictum* implying a static 12% rate of return is inconsistent with modern rate-setting methodologies. This misconception can result in underinvestment where the opportunity cost of investing is below the 12% threshold or may provide investors a windfall where the where the opportunity cost of investing is above the 12% threshold. Additionally, its ruling barring income tax recovery for rate determination purposes where the reasonable rate of return is computed on an after-tax weighted cost of capital basis prevents firms from obtaining a fair and reasonable rate of return. It is recommended that remedial legislation be enacted to address the above concerns and advance consumer welfare.

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