Submission on EB 2020-0200 by Russ Houldin

Cost of Capital

Reference:Issue E. Cost of Capital (Exhibit 5)

20) Is the proposed 2024 Capital Structure, including return on equity, appropriate?

21) Is the proposed 2024 cost of debt and equity components of the capital structure

appropriate?

22) Is the proposed phase-in of increases to equity thickness over the 2024 to 2028

term appropriate?

1.Introduction

In this brief I argue that the cost of capital and return on equity, in particular, that have been allowed by North American regulators are too high. However, there are signs that the tide is turning. The current Ontario Energy Board (OEB) panel has an opportunity to be at the head of a wave that will bring substantial relief to beleagured consumers. I also argue that the OEB should consider an alternative approach to carbon "pricing" which follows from an understanding of the true nature of capital as a factor of production. The brief is organized as follows: first there is a section on how significant opinion is shifting on utility cost of capital; next first principles of the meaning of capital in economic theory are outlined; third, a general answer is given to the way to determine what should be cost of capital, drawing on the seminal recent work of Thomas Piketty, and, then, specifically what this means for infrastructure utilities; the fourth section reviews the OEB's history on cost of capital in light of the foregoing and how the current panel should proceed; and, the final section summarizes the recommended approach and comments on Enbridge's Final Argument submission.

2.Turning of the tide

2.1 A recent study for the Haas school at Berkeley[1] provides an exhaustive look at the cost of capital allowed by regulators for utilities since 1980. The study concludes that regulators have been too generous. Compared to capital market trends the average Return on Equity (ROE) for utilities has been between 0.5% to 5.5% higher. The Haas institute is perhaps the most influential opinion leader on energy matters in the US. The most recent trend in regulated ROE is a decrease of about 10%.[2] The resulting ROEs are higher than the levels suggested by the Haas analysis which likely means that the downward trend will continue.

3.Capital crimes and remedies

3.1 It would surprise most people to learn that the concept of capital in economic theory is extremely vague. Yet this is the case[3]. The vernacular concept of capital as investment does not hold up as an economic concept. Concretely investment takes the form of production technology, including any civil structures in which production takes place. These are the products of prior periods of production. Thus

[1] Werner K.D, and Jarvis S.

[2] Standard and Poors (S&P) Global

[3] See D Hausman for a detailed discussion of the various concepts summarized in the text.

the generally received notion of capital involves a chicken-and-egg circularity. In the conventional economic literature there are four accounts of the nature of capital: Bohm-Bawerk holds capital to be a measure of "roundaboutness" of production; a number of authors identify capital with entrepreneurship; Boulding proposes that capital is measure of organization; and Paolo Sraffa says capital is the "production of commodities by commodities" in which "capital" is "dated labor". All of these are problematic. Why would indirect production be more productive than direct? Entrepreneurship and organization are simply specific types of labor. How is "dated labor" different than just "labor"? Sraffa's definition has the same problem as Bohm-Bawerk and of the vernacular conception; from where did the intial commodities arise and how is this different from labor?

3.2 There is also the Marxian concept that capital is the surplus of exploited labor. As already noted, machines and buildings, which many would think naively as capital, are the products of prior labor. According to Marx's "labor theory of value", originally proposed by Ricardo, all value is attributable to labor, therefore value ascribed to capital is value appropriated from labor.

3.3 Going back to first principles capital has been regarded as one of three fundamental factors of production, with labor and land as the other two. A factor is distinguished from an input" because a factor is invariable whereas inputs vary by product. Like other inputs factors receive remuneration. We give these forms of remuneration special names; "wages" for labor, "rent" for and and "interest" for capital. No production is possible without labor or land, construed, in the limit, as some space in which production occurs. Capital is given this status in the textbooks but what actually does it contribute? As already noted, any machines, or more broadly "technology", are products of some prior period during which there must have been labor and land. So "capital" is a way of bridging production periods. Figure 1 gives a stylized picture of production in general.

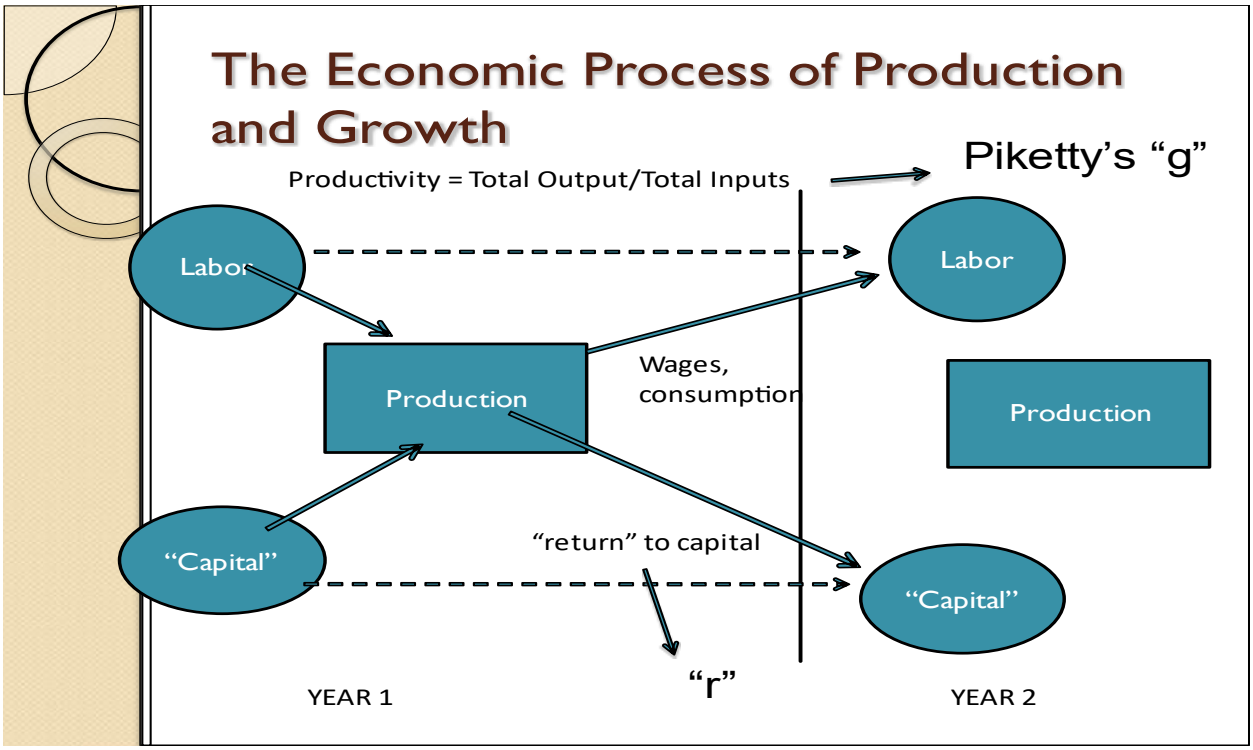

Figure 1

3.4 Prior to the 18th Century (C18) economic activity was completely dominated by agriculture. Almost all production was consumed in the current period and there was very little devoted to the accumulation of production equipment for the future. Starting with a revolution in agricultural production, which "freed" labor for work in the emerging factory system, gradually and then suddenly a larger fraction of output became available for future production. This created a virtuous circle of ever-increasing labor productivity. This process was socially devastating but laid the foundation for the modern economy which is orders of magnitude more productive than in the C18.[4] The clearest indicator of this is the shrinkage of the agricultural share of output, from over 95% in C17 to less than 2% today.

3.5 Of the theories reviewed above the Marxian account is actually the closest to a coherent definition: capital is the state-sanctioned share of future output.[5] What the Marxian analysis misses is the acknowledgment that some mechanism was necessary for the virtuous circle of productivity to be actuated and that markets were that available mechanism. It is true that in the historical circumstances in which industrial production arose there was exploitation and misery, matched by unprecedented wealth on the part of those who owned the "capital". This process still continues, in relations between the older "advanced" economies and "underdeveloped" economies. However, industrial capitalism has created wealth for entire populations that could not have been dreamt of 300 years ago.

3.6 The form that the rights to future output took is the familiar financial infrastructure. The crucial institution is the limited liability corporation, the existence of which and the rules of conduct were set by the state. The ground was laid by the first corporations which were explicitly given status by the Kings of France and Sovereigns of UK. In due course the corporate form has become sanctioned in general law. In particular, the idea that a corporation is treated the same as a natural person for tax purposes but given special protection for assets is central to the universal financial architecture of the modern economy.[6] Laws have enshrined two forms of claims on future output: debt, which is given a larger share of protection in bankruptcy; and, equity, which is the residual set of claims. We forget that these are essentially arbitrary distinctions but are, again, part of the historical legacy.

3.7 The treatment of the land factor by economic theory mirrors the loss of economic and political power of the owners of land. The textbooks no longer refer to land as a factor of production. Let me suggest that land is now a proxy for environment.[7] While there is a literature on environment as a factor of production that pursues an analogy with capital, there has been very little interest on the more obvious analogy with labor. Like labor the environment is exploited by the human economy. As the scale of the human economy expanded the assumption that the environment is "free" became increasingly untenable. By contrast the analogy with capital is very weak. Leaving aside the inconsistencies in extant theory, briefly discussed, the analogy fails *prima facie*: capital is produced, nature is not.

4.Fight the future

4.1 Given the definition of capital as the state-sanctioned share of future output, is there a "right" share of output between labor and capital? Over the long run (ten years or more) the share of output that may

[4] Karl Polanyi's **The Great Transformation** remains the definitive account of this process.
[5] Baran, P. and Sweezy, P.
[6] See Bazelon D.
[7] Houldin R.W.

be returned to the owners of the claims on future output cannot exceed the rate of growth of output of the economy as a whole without large changes in the share going to income. The problem with this is that income drives consumption and, at a certain point, if consumption falls enough the whole economy collapses. Before that happens there is likely to be social unrest.

4.2 The Harrod-Domar model of economic growth enshrines the basic ideas of the relations among labor, capital and economic output.[8] Later Solow[9] developed the model of "exogenous" technology growth in which two-thirds of growth are explained by unspecified "technical progress". More recently, Romer has developed a model of "endogenous growth" which requires a certain degree of monopoly power to overcome the potential loss to firms as a result of knowledge transfer by employees.[10]

4.3 Piketty's work has received considerable attention. While he accepts the theoretical framework summarized above, his contribution is to develop long historical time series of the relevant economic aggregates (income, wealth and employment), primarily for France, UK and USA. He notes periods in which the return on investment ("R") has exceeded or fallen below the rate of growth of the economy as a whole ("G"). The last 30-40 years has seen a long period in which income and wealth inequality has increased, i.e. R>G and, increasing disparity between the top 1% of owners of income and wealth and everyone else.

4.6 These are general rules but what should be the specific rules for utilities? Utilities are a unique sector. They provide, in modern life, essential services. There is no reason that they should not be provided by public agencies. In the US the electricity sector has run a "natural experiment" whereby about a quarter of electricity used involves public ownership. Over 80 years of data shows categorically that these are, on average, 10% cheaper than equivalent private utilities.[11] There is no reason to believe that this would be any different for natural gas. That corresponds almost exactly to the extra cost of private equity investment. The benchmark for the return on capital should therefore be the cost of capital to public agencies. Higher returns just mean a continuation of the dangerous trend of increasing income and wealth inequality. There is no evidence that this would, in fact, detract from private ownership. Private investors buy up government securities like hotcakes. The real nature of capital is revealed in the periodic panics that have occurred. In particular, the last major panic of 2008 showed that investors love utilities. This was denoted by the euphemism "flight to quality". Utilities have no risk beyond that of the collapse of the state and their owners should receive no more remuneration than that of governments.

5. What's been hid and what's been did

5.1 Nevertheless, the fact remains that regulatory agencies exist within a specific context of jurisprudence. The "fair return" standard has been interpreted to mean ROEs far higher than necessary to provide the capital needs of utilities. While individual panels of the OEB are not bound by prior decisions, it would take courage to break from the past.

5.2 In this regard, the Decision in 1998 by the "new" OEB, created by the 1998 **Energy Competition Act**, has hovered over all succeeding proceedings like Banquo's ghost. Based on a report by Cannon the OEB

[8] Harrod R.F.
[9] Solow R.M.
[10] Romer, P.
[11] American Public Power Association (APPA)

set 9.88% as the allowed ROE for electricity distributors and endorsed the "risk premium" methodology. In subsequent proceedings on natural gas this became the standard.

5.3 As part of its consultations on a new approach to Incentive Rates in 2006[12] the OEB retained financial experts Lazar and Prisman. Their report proposed an amended methodology and a much lower ROE of 5.78-7.02% using a methodology based on the Capital Assets Pricing Model (CAPM). The financial community responded with howls of protest, calling their report's recommendations "confiscatory".[13] Unsurprisingly, OEB's own report[14] rejected Lazar and Prisman and instead proposed a retention of the risk premium methodology using zero coupon 30 year Canada bonds as the riskless rate. "The sensitivity of the Lazar/Prisman approach to various assumptions and the lack of clearly comparable firms, have convinced the Board to maintain the current approach to setting ROE."[15] This yielded an allowed ROE at the time of 9.35%.

5.4 OEB claims that it has no choice but to apply the "fair return" standard due to jurisprudence. While the OEB has shown no inclination to take a different approach to ROE this has not been the case when it comes to the labor share of production. In 2010 the OEB overruled a Collective Bargaining Agreement (CBA) between Ontario Power Generation (OPG) and its unions to remove $145m in costs.[16] At that time jurisprudence suggested that the OEB lacked authority over CBAs. Eventually the Supreme Court upheld this action; perhaps it would also uphold deviation from the "fair return" standard? In fact, the OEB has a longstanding bias against unions. This is most clear from its policy on intervenor cost recovery which awards industry groups costs in proceedings but not unions.

5.5 In 2009 OEB reviewed its capital cost policy in light of the September 2008 financial crisis. In its report OEB announced some technical changes to the Incentive Rate Mechanism (IRM) formula. The main lesson from this exercise, however, was what the financial community calls the "flight to quality", as noted. What this means is that in a financial panic, investors move to low risk investments. Utility investments are such investments.

5.6 As to the capital structure, while utilities remain private and direct investment is sought, there is no alternative to setting capital structure according to the "rules of thumb" provided by historical capital markets. From a consumer perspective, the burden on the consumer would be reduced to the minimum by public ownership financed 100% by debt, but this is unrealistic in the current context. Enbridge should be allowed a capital structure similar to other private energy utilities.

6. There must be some way out of here

6.1 Consumers have been unfairly gouged and deserve a break. In the current geopolitical context the commodity price of natural gas is very likely to remain high so reducing the capital cost is an important way to reduce the burden. ROE should be the social discount rate for Ontario government investments[17]. I note that this issue was not settled by the parties. The allowed debt should be the actual recognized

[12] EB 2006 0088
[13] BMO Capital Markets Comment
[14] P19 Board Report December 20, 2006.
[15] For those who like irony, compare this dismissal of Lazar and Prisman to the Final Arguments of Enbridge and Board staff regarding cost of capital. The financially naïve might think that the current approach is sensitive to "certain assumptions" and "lack of clearly comparable firms".
[16] EB 2010 0008
[17] Spiro P.S.

debt. Capital structure should be about the same as now, which is consistent with the Settlement Proposal. Since the thrust of this submission is to reduce consumer costs, the equity portion should remain at 36%. According to Enbridge's Argument-in-Chief, this would save $54.5 million (paragraph 630). Enbridge's Final Argument rehearses the *status quo* arguments about ROE, which are refuted above. As to the "transition risk" to Enbridge, this is no more of a risk than other putative risks. As long as Ontario remains part of a viable civilization the government will underwrite any risks to the delivery of the means of keeping a majority of Ontario citizens warm in a cold climate, just as it will always ensure delivery of water and sewer services. In the limit this would mean taking over Enbridge's assets if it is unable to maintain them. As already argued, there is no reason to accord Enbridge a bonus ROE beyond the returns available to holders of Ontario's long-term bonds. The additional savings cannot be estimated until the OEB updates its cost of capital parameters, expected in October 2023..

All of which is respectfully submitted.

Russ Houldin

104 Hove St, Toronto ON M3H 4Z3

Phone 647 228 1161

References

American Public Power Association, Stats and Facts | American Public Power Association (last access July 2023).

Baran, P. and Sweezy, P., **Monopoly Capital**: **an essay on the American economic and social order** New York, New York Monthly Review Press, 1968.

Bazelon D.T., **The Paper Economy** New York, Random House, 1963.

BMO Capital Markets Research Comment June 27, 2006 "Pipelines/Gas and Electrical, authors Karen Taylor and Michael McGowan.

Domar, E., "Capital Expansion, Rate of Growth and Employment" **Econometrica** 14(2) 137-147, 1946.

Harrod, R.F., "An Essay in Dynamic Theory" **The Economic Journal** 49 (193) 14-33, 1939.

Hausman, D.M., **Capital, Profits and Pricing; an essay in the philosophy of economics** New York, Columbia University Press, 1988.

Houldin, R.W., "Nature's wages: a factor-based alternative approach to environment-economy integration" **New Zealand Economic Papers** 34 (1), 111-128, 2000.

Piketty, T., **Capital in the Twenty-first Century** Cambridge MA, Belknap Press of Harvard University, 2014.

Piketty, T., **Capital and Ideology** Cambridge MA, Belknap Press of Harvard University, 2020.

Polanyi, K., **The Great Transformation** Boston, Beacon Press, 1946.

Romer, P., **Endogenous Technological Change** Cambridge MA, National Bureau of Economic Research, 1989.

S&P Global Market Intelligence, August 2020 Electric ROE Authorizations Drift Lower In H1'20 As Virus Worries Continue | S&P Global Market Intelligence (spglobal.com) (last access September 12, 2023)

Solow, R.M., "Technical change and the aggregate production function" **Review of Economics and Statistics** 39 (3), 312-320,1957.

Spiro. P.S., "The Social Discount Rate for Provincial Government Investment Projects" in Burgess, D. and Jenkins, G.P., eds., **Discount Rates for the Evaluation of Public Private Partnerships** (2010, McGill-Queen's University Press, Montreal.)

Werner K.D. and Jarvis S., "Rate of return regulation revisited" Energy Institute at Haas Working Paper 329 September 2022.