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CONSULTANT REPORT

ON LONG-TERM ASSET MANAGEMENT
(TASK 4)

MOLDOVA ENERGY REGULATORY PARTNERSHIP

May 2015

This publication was produced for review by the United States Agency for International Development. It was prepared by George B. Schaeffer.

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Executive Summary

Task 4 covers a number of diverse but interrelated topics concerning the treatment of long term assets within a financial accounting system. With very few exceptions and most of them holdovers from a period when financial reporting was not as defined as it is today and when large Utilities dominated the public market of ownership, regulatory and accounting guidelines are largely the same set of rules. Public accounting, even since the 1970's, has come a long ways in both professionalism and clearly defined rules to support chartered accountants in undertaking their task of reporting financial information in an unbiased and informative manner. That is not to say mistakes are not made. The most recent case was ENRON where a very large, public energy company manipulated financial information with the support of their auditor, Arthur Andersen. Arthur Andersen was one of the five leading audit firms in the world. Of little surprise was the demise of ENRON. However, due the blatant misuse of the public's trust in the audit function, Arthur Andersen, a long establish audit and accounting firm, disappeared in a matter of months as well. The point is accounting today is taken very seriously by all those involved.

Task 4 involved recommendations concerning methods of calculating depreciation accepted in tariff purposes, asset revaluation and difference that might exist between International Accounting Standards and Regulatory Accounting. To reach a full understanding of these concepts a number of areas need to be explained as the simple answers must be given in context with a much bigger picture.

The first step is a quick overview of the basic accounting guidelines that underlie the specific standards. The purpose is to make the user of financial statements aware of the broad concepts that specific rules (International Accounting Standards) are based on. Were possible the guidelines have been directly related to utility reporting.

The second step is to demonstrate why the question of task 4 is important in the rate making process. The question impacts two of the most significant parts of the Revenue Requirement. The first is depreciation and the second is the Regulated Asset Base (RAB). Given that Utilities financial statements contain expensive, long lived assets the magnitude and calculation of both depreciation and the RAB are significant determinants of final price.

The third step is to examine the aspects of accounting for long term assets. These would included the initial recording of the long term assets in the operating statements, the cost allocation over time and finally the monetary units effects on such long lived assets.

Given the long useful lives many of these assets have, it is important to understand the treatment of their value during inflationary periods. There are periods when the monetary units erode the true economic value of the assets. As a result, the reported financial statements distort the true value of the company. For the price setting mechanism of a Regulator, low assets value understates the final price and allows the infrastructure to erode into dysfunction.

The final step is to examine the different types of revaluation methods available. The three most common are the index approach, the replacement cost and the appraisal approach. Under the environment for which ANRE works, the index method is the most appropriate.

Objective

ANRE faces a difficult situation with two of its licensees. The first being the Transmission System Operator (TSO) and the second being the Distribution Operator Union Fenosa. Within the Regulatory Regime it is very clear the Rate of Return will be based on the book value of assets. However, under certain conditions an allowance for monetary erosion will be allowed that would raise the regulatory asset base (RAB) that is used to calculate return. Correspondingly, the amount of depreciation will also to keep pace with inflation. The contentious issue is what is the proper method to recognize inflation and by how much to adjust.

From the TSO standpoint they have consistently revalued assets beginning in 2004 with the last revaluation coming in 2011. The issue developed as to the methodology used to determine assets values. Different methodologies yield significantly different values that ultimately affect price. The disagreement escalated into a lawsuit against ANRE. Further discussion of this matter will come under the revaluation sub section.

As for Union Fenosa, a similar disagreement applies but with a different angle. At the time of the purchase, the amount paid was US\$ 27 million for a book value of US\$ 131,000 in assets. It was agreed at that point from a regulatory standpoint that ANRE would allow an accelerated depreciation rate of 15 years so that Union Fenosa could have built into the tariff a margin to invest more capital and improve the antiquated system. Given the depreciated conditions of most of the assets at buyout, which were both a carryover from the Soviet period and not upgraded during its period as a State owned company after independence, an accelerated depreciation rate was acceptable and good business for both sides. Today, the 15 year period has elapsed and the original assets have a book value of zero. Union Fenosa claims that according to their depreciation schedules, their assets continue to have value and they are threatening to revalue the assets. Further discussion of this situation will come in the respective sections.

Key Findings

The key finding is that ANRE was handling the issue of revaluation in the correct manner. This was proven both through Moldovan Court System and in discussing the topic with internal staff. The issue arose as Union Fenosa threatens to revalue assets originally purchased 15 years ago. It was agreed at that time the depreciation lifetime was 15 years which was very favorable to Union Fenosa. The reason for such a rapid investment (15 years) was valid – Union Fenosa needed to invest large amounts of capital in an aging system.

The 15 year period is past and now those original assets have a book value of zero. Any revaluation of assets would come with the exact same revaluation of accumulated depreciation. The book value of the original purchase price is zero. That translates into no contribution to the tariff of electricity by those assets through the Regulated Asset Base.

In terms of depreciation, the International Accounting Standards are open to any method that reflects the economic life of the asset. In this case it is the straight line method which is being used by all licensees.

If there is an issue it would be Union Fenosa did not practice balance sheet management. Inflation was high in the early 2000 period and then dropped to around 5% in recent years. Union Fenosa should have been revaluing assets periodically to capture the loss in value from accumulated inflation. ANRE would have accepted that as they did exactly the same for the TSO who did periodically revalue.

Basic Accounting Principles and Guidelines

The phrase "generally accepted accounting principles" consists of three important sets of rules: (1) the more broad based basic accounting principles and guidelines, (2) the detailed rules and standards issued by the International Accounting Standards Board (IASB) and (3) the generally accepted industry practices.

Prior to examining the answers to question regarding specific issues for the Regulator, there are certain broad based basic accounting principles and guidelines that one needs to have at least a moderate understanding of prior to getting into the details of the specific rules. These general rules form the groundwork on which more detailed, complicated, and legalistic accounting rules are based. These principles underlie any decision that must be made concerning accounting and the use of figures provided by accounting for analysis, pricing and valuation. Although there are ten basic ones, not all apply to the situations discussed in the Task 4. As such this Report merely identifies the ones that do not directly impact the discussion and explain in more detail the ones that do impact the ANRE situation.

If a company distributes its financial statements for public consumption (which would include regulation), it is required to follow generally accepted accounting principles in the preparation of those statements. Further, if the firm is publicly traded, most federal law requires the company's financial statements be audited by independent public accountants. Both the company's management and the independent accountants must certify that the financial statements and the related notes to the financial statements have been prepared in accordance with IASB standards.

International Accounting Standards (IAS) is exceedingly useful because it attempts to standardize and regulate accounting definitions, assumptions, and methods. Because of generally accepted accounting principles, one is able to assume that there is consistency from year to year in the methods used to prepare a company's financial statements. And although variations may exist, one can make reasonably confident conclusions when comparing one company to another, or comparing one company's financial statistics to the statistics for its industry. Over the years the generally accepted accounting principles have become more complex because financial transactions have become more complex.

Since IAS is founded on the basic accounting principles and guidelines, we can better understand IAS if we understand those accounting principles. The following is a list of the ten main accounting principles and guidelines together with a highly condensed explanation of each.

I. Economic Entity Assumption

The accountant keeps all of the business transactions of a sole proprietorship separate from the business owner's personal transactions. For legal purposes, a sole proprietorship and its owner are considered to be one entity, but for accounting purposes they are considered to be two separate entities.

Although obvious, it has direct implications within the electricity sector. With the unbundling the TSO, the pending DSOs and the supplier will all be required to report as separate entities that express only their individual operations. For example, the TSO is owned by the GOM. Under this guideline the TSO must report only its operations and not its operation comingle with the GOM.

2. Monetary Unit Assumption

It is a basic assumption that all financial statements are reports in monetary units that are stable. This implies that the financial results from period to period can be compared with some degree of consistency. This is a vital concept. For analysis purposes one looks for trends in operations to determine the general direction of economic activity. From a Regulatory standpoint, the objective is to reach a fair price for the final product. Given that many utilities are comprised of large scale assets with long term useful lives, historic cost plays a major role in determine the final price a consumer must pay. If the monetary unit is declining each year that means the true economic value of the assets is being understated. Using such figures to set a price that contains a large component of fixed charges mean the price derived will be understate. While this result is favorable in the short term for the public, it consistently does not allow the utility to recoup it full costs and eventually its assets base will erode to a point that services decline sharply. Common symptoms of such a situation are high losses, frequent black outs, load shedding and in many cases public unrest as electricity is a basic good to a productive society.

3. Time Period Assumption

To make financial statements useful the time period must be the same in length and starting and ending point. Quarterly reports cannot be usefully compared to annual reports (even on a common size basis) because economics, environment and short term fluctuations will distort the comparison. Electricity has a seasonally to it like most businesses. They are periods during the year when consumption is higher, disruption more frequent (winter) and people may pay slower.

4. Cost Principle

From an accountant's point of view, the term "cost" refers to the amount spent (cash or the cash equivalent) when an item was originally obtained. Under conditions of a stable monetary unit, it is assumed that the reporting of all assets is the original costs paid.

Because of this accounting principle asset amounts are not automatically adjusted upward for inflation. Both IAS 16 and IAS 29 to allow for adjustments to reflect inflation.

5. Full Disclosure Principle

If certain information is important to an investor or lender using the financial statements, that information should be disclosed within the statement or in the notes to the statement. It is because of this basic accounting principle that numerous pages of "footnotes" are often attached to financial statements.

As an example, let's say a company is named in a lawsuit that demands a significant amount of money. When the financial statements are prepared it is not clear whether the company will be able to defend itself or whether it might lose the lawsuit. As a result of these conditions and because of the full disclosure principle, the lawsuit will be described in the notes to the financial statements.

A company usually lists its significant accounting policies as the first note to its financial statements.

6. Going Concern Principle

This accounting principle assumes that a company will continue to exist long enough to carry out its objectives and commitments and will not liquidate in the foreseeable future. If the company's financial situation is such that the accountant believes the company will not be able to continue on, the accountant is required to disclose this assessment.

If the going concern principle does not apply, a different approach is required. All assets and liability values must be adjusted to a liquidation value. For a utility with highly specialized equipment this results in a massive reduction in asset value as electricity infrastructure is largely special purpose.

7. Matching Principle

This accounting principle requires companies to use the accrual basis of accounting. The matching principle requires that expenses be matched with revenues. A common example of this principle is depreciation. A machine with a 10 year life should have its cost spread out over the years that it will be productive, and not expensed in total at the time of purchase.

8. Revenue Recognition Principle

Under the accrual basis of accounting, revenues are recognized as soon as a product has been sold or a service has been performed, regardless of when the money is actually received. This principle closely resembles the matching principle.

9. Materiality

Because of this basic accounting principle or guideline, an accountant might be allowed to violate another accounting principle if an amount is insignificant. Professional judgment is needed to decide whether an amount is insignificant or immaterial.

ANRE needs to seriously evaluate its current accounting for investments (see task 5). At present they are required to evaluate each transaction valued at \$300 or more and has a useful life of greater than one year. In addition to being time consuming from both an operator and regulator standpoint, it becomes a logistics and paperwork quagmire. It detracts from ANRE true mission within the sector which is to oversee the sector to insure that both the public and the private sector are treated fairly. Finally, it just drives up the cost to the finally consumer by managing such detail.

10. Conservatism

If a situation arises where there are two acceptable alternatives for reporting an item, conservatism directs the accountant to choose the alternative that will result in less net income and/or less asset amount. Conservatism helps the accountant to "break a tie." It does not direct accountants to be conservative. Accountants are expected to be unbiased and objective.

Basics for Assessing Rate of Return

Prior to developing the answers to the specific issue, a short overview of the basics of rate making will demonstrate the importance of the issues and the impact on the tariff. The goal of rate-of-return regulation is for the regulator to evaluate the effects of different price levels on potential earnings for a firm in order for consumers to be protected while ensuring investors receive a "fair" rate of return on their investment. Prior to moving directly into the solution background material to help fully understand the impact of the issues involved.

The basic rate of return calculation is as follows;

$$RR = (RAB \times r) + E + d + T$$

Where

RR equals the Revenue Requirement of the Utility. The amount of revenue the regulated-monopoly requires for full cost recovery.

RAB equals the amount of capital and assets the regulated-monopoly utilizes in order to provide its services

- B=Rate Base: The amount of capital and assets the regulated-monopoly utilizes in order to provide its services
- r=Government Permitted Rate of Return: The cost the regulated-monopoly incurs to finance its rate base including debt and equity. Normally this answer is provide for through the use of the Weighted Cost of Capital-
- E=Operating Expenses: The cost of supplies including capital and labor used on a short-term basis (usually one year) in order to provide services (does not include initial investments included in base rate such as cost of supplies to build plant)
- d=Depreciation Expense: The annual amount the regulated-monopoly spends on accounting for depreciation of its capital
- T=Taxes: Those taxes not included in operating expenses and not charged directly to customers

Regulators use this formula in order to ascertain the proper revenue to support operations, allow a fair rate of return to investors and protect customers from the monopoly position an electricity service provider maintains.

There are two key variables with the RR equation - depreciation and Revenue Asset Base (RAB). In the following sections we will develop the generation rules that apply to each.

Long Term Assets and Depreciation

From an international accounting standpoint, the treatment of long term assets is clearly defined. The guideline is International Accounting Standard 16 (IAS 16). IAS 16 provides for two acceptable alternative approaches to accounting for long lived assets. The first of these is the historical cost method. An item of property, plant and equipment should initially be recorded at cost. Cost includes all costs necessary to bring the asset to working condition for its intended use. This would include not only its original purchase price but also costs of site preparation, delivery and handling, installation, related professional fees for architects and engineers, and the estimated cost of dismantling and removing the asset and restoring the site. Items of property, plant, and equipment should be recognized as assets when it is probable the future economic benefits associated with the asset will flow to the entity, and the cost of the asset can be measured reliably.

This recognition principle is applied to all property, plant, and equipment costs at the time they are incurred. These costs include costs incurred initially to acquire or construct an item of property, plant and equipment and costs incurred subsequently to add to, replace part of, or service it. This method records the cost of the asset at its initial purchase or construction cost at the time the asset is put into production. This first estimation is called the acquisition cost and is the initial recognition of the assets on the balance sheet as an operating asset. The normal treatment is to then define the useful life of the assets and, using an accepted formula, allocate original cost of the asset's value over time. Such procedures are in agreement with the basic accounting tenet called the Matching Principle.

The depreciation method used should reflect the pattern in which the asset's economic benefits are consumed by the entity; a depreciation method that is based on revenue that is generated by an activity that includes the use of an asset is not appropriate. In terms of the actual allocation of cost over time IAS leaves this decision in the hands of the owner/operator. This represents a point of departure between financial accounting and regulatory accounting in that such institutions such as the Federal Energy Regulatory Commission (FERC) in the U.S. do prescribe certain useful lives for particular assets. This is to prevent distortion of energy pricing towards consumers and manipulation of financial data that would otherwise prevent fair pricing of energy.

As for actual depreciation methods, the common ones are straight line, unit cost, sum of the years digits and declining balance. The latter two methods are design for assets that depreciate much faster in the early years of life. The unit cost method is designed for production type machines where wear and tear can be measure as a function of output. One could make a case that unit cost could apply to generation, but general practice within the industry does not normally utilize it as many factors play into the wear and tear of a generation assets.

The method left is straight line. Given that energy assets remain rather stationary in their life time, straight line depreciation is the most effective method to match the cost of the assets with the point where the revenue is recognized. Again this is the matching principle. A small straightforward example will illustrate. A km of 220 kV transmission line is built at a cost of US \$4 million. The estimate useful life is 40 years. Therefore, for the next 40 years the utility will be able to recognize US\$100,000 as a depreciation cost. This cost recognition becomes part of the depreciation charge within the RR equation we outlined earlier.

The historical cost can be altered in two ways under IAS 16. The first case is if the assets suffer permanent impairment that renders its economic value less than historical cost. Under these circumstances the utility is allowed to accept a onetime charge for the loss in economic value and then readjust the cost of the assets to its new, lower assessed value. An example will illustrate. The utility has a substation with a value of US\$ 10 million and a useful life of 20 years. A natural disaster occurs and the substation becomes flooded for a period of time. The water causes permanent damage to the transformers, meters and switchgear. The engineers examine the equipment after the flooding and concluded that the water has reduced the economic value of the equipment by 50% because it has lost some of its efficiency. It still can be used, but it will not work as well. From an accounting standpoint one would reduce the historical cost by 50% and the accumulated depreciation by 50%. The net result is the book value is now half.

IAS 16 also recognizes the monetary unit which the asset's reported in can become distorted. In other words the monetary value of the estimate of the asset's economic life does not provide for a fair value of the asset. The normal cause of such a situation is inflation and the rise, relative to other currencies, of the local currency. IAS 16 recognizes this and allows for revaluation to bring the economic value in line with the monetary value. Under the revaluation model, revaluations should be carried out regularly, so that the carrying amount of an asset does not differ materially from its fair value at the balance sheet date. If an item is revalued, the entire class of assets to which that asset belongs should be revalued. In

addition, the accumulated depreciation must be adjusted by the same relative amount as the asset. For example, if the revaluation of the assets calls for an increase of each asset's value by 50%, the accumulated depreciation must be increased by 50% as well.

It is common to see companies revaluing their fixed assets. It is important to make the distinctions between a 'private' revaluation to a 'public' revaluation which is carried out in the financial reports. Some of the reasons for undertaken a revaluation is as follows:

- To show the true rate of return on capital employed.
- To conserve adequate funds in the business for replacement of fixed assets at the end of their useful lives. If historic costs have been eroded by inflation, the provision for depreciation based on historic cost will show inflated profits and lead to payment of excess dividends.
- To show the fair market value of assets which have considerably appreciated since their purchase such as land and buildings.
- To negotiate fair price for the assets of the company before merger with or acquisition by another company.
- To enable proper internal reconstruction, and external reconstruction.
- To get fair market value of assets, in case of sale and leaseback transaction.
- When the company intends to take a loan from banks/financial institution by mortgaging its fixed assets. Proper revaluation of assets would enable the company to get a higher amount of loan.
- Sale of an individual asset or group of assets.
- In utilities revaluation reserves are required for regulatory reasons.
- To decrease the leverage ratio (the ratio of debt to equity).

As for the actual accounting treatment, if a revaluation results in an increase in value, it should be credited to other comprehensive income and accumulated in equity under the heading "revaluation surplus" unless it represents the reversal of a revaluation decrease of the same asset previously recognized as an expense, in which case it should be recognized in profit or loss.

Given the long term nature of energy assets (some as high as 40-50 years) inflation will have a significant impact. The impact will come within two areas of our RR equation. The first will be in the depreciation charge each year. With inflation not reflected in the asset's value, the estimated depreciation expense will be too low when compared to the economic value of the asset. The second impact will be on the RAB. As the value of the assets gets eroded by inflation, the RAB is lower relative to its real (or replacement) value. This will understate the rate of return earned by the investor. With lower returns comes a lack of investor interest and eventually a decline in the utility system as a whole.

The true impact can be best demonstrated through a moderate example using Moldova and its currency the lei. In 2012 Union Fenosa purchased a transformer for US\$50,000 and it is assumed the useful life is 10 years. Over the next four years the inflation rate was a modest 10% per year. Given that inflation is compounding each year, that 10% annual rate causes the reporting currency to decline by 44% relative to a reference currency with no inflation. A number of outcomes are created within this situation. The first is the assets within the RAB are now being understated because the reported currency has lost 44% of its value. The depreciation charge follows the same scenario. Because each of these key components in the critical RR formula are understated, that means the RR will be too low to fully represent both return to investor and debt repayment. In addition, the depreciation charge will be too low so that when it comes time to replace the asset the funds will not be present to purchase the replacement assets.

However, there is a winner in all this - the consumer. As long as the costs are being understated, that translates into a lower final tariff. In the short run this is a great benefit to the consumer until such

point the infrastructure needs to be replaced. Two scenarios will be played out at this point. The utility will find itself in the position of being self liquidated. The infrastructure has declined to a point where it has no economic value. Either the consumer faces very rapidly rising rates as the utility must undergo rapid investment to “catch up” from the affects of years of neglected. The second possibility is that service declines as assets are used up without replacement.

To overcome the monetary distortion caused by inflation, IAS 16 as well as IAS 29 recognize the need to revalue. The logic of recognizing revaluations relates to both the Statement of Financial Position and the statement of comprehensive performance as measure by the Income Statement. Due to the effects of inflation (where even moderate amounts can compound quickly with long term assets) the Statement of Financial Position (or Balance Sheet) reporting will be meaningless as the just becomes an agglomeration of dissimilar costs from different periods when the assets were purchased.

One of the major questions posed by ANRE is can a fully depreciated asset be revalued. The answer is no. A fully depreciated asset cannot be revalued because of accounting's cost principle, matching principle and going concern assumption. For instance, let's assume that a company purchased a building 30 years ago at a cost of US\$600,000. The company then depreciated the building at a rate of US\$20,000 per year for 30 years. Today the building continues to be used by the company and it plans to continue using it for many more years. The company's current balance sheet will report the building at its cost of US\$600,000 minus its accumulated depreciated of US\$600,000. In other words, the building will be reported at its book value of \$0. If you assume a revaluation does occur at say 50% then the value of the building becomes \$900,000, but the accumulated depreciation is also adjusted upwards 50% so its value also becomes US\$ 900,000. The book value remains zero.

The *cost principle* prevents the company from recording and reporting more than its actual cost of \$600,000. The *matching principle* requires that only the actual cost of \$600,000 can be allocated or matched to the years in which the company benefits from the use of the building. Lastly, the company is assumed to be a going concern and therefore it is not liquidating. Hence the amount that the company would receive if it sold the building is not appropriate for its public reporting.

Hyperinflationary Economics

Although IAS 29 does not define hyperinflation in numerical terms, it sets out the general characteristics of a hyperinflationary economy.

These characteristics would include the following five conditions:

1. Where the preference is to keep wealth in nonmonetary assets or in a stable foreign currency. Any local currency would be immediately invested in order to attempt to maintain its purchasing power.
2. Where prices are quoted in a stable foreign currency and the population regards monetary amounts in that currency, as effectively a local currency.
3. Where transactions are priced at an amount that includes compensation for the future expected loss of the purchasing power of the local currency. This characteristic would be taken into account even if the credit period is quite short.
4. Where prices, wages, and interest rates are closely linked to a price index.

5. Where cumulative inflation rates over a period of three years approach or exceed 100%.

Although IAS 29 sets out the characteristics that may indicate a hyperinflationary economy, it also states that judgment will have to be used in determining whether restatement of the financial statements of the entity is required. Likewise, judgment will be required in determining whether an economy is no longer hyperinflationary. The criteria used for this is whether the cumulative inflation rate drops below 100% in a three-year period. When the economy ceases to have hyperinflation, then the entity should discontinue preparing financial statements in accordance with IAS 29. If possible, all entities in that environment should cease to apply the Standard from the same date.

If property, plant, and equipment are stated at revalued amounts, certain additional disclosures are required. The first is the effective date of the revaluation and whether an independent valuer was involved for each revalued class of property, the carrying amount that would have been recognized had the assets been carried under the cost model, the revaluation surplus (including changes during the period) and any restrictions on the distribution of the balance to shareholders.

It should be pointed out that if a subsidiary (in this case Union Fenosa) is operating in a hyperinflationary economy and the parent entity is not, then the parent entity would prepare financial statements using IFRS and the subsidiary would use IAS 29.

For Moldova, inflation figures for the period since 1999 were examined and table I reports it. With the exception of one period, 1998-2000 when the accumulated rate hit 96%, Moldova did not close to the three year compounded 100% threshold. For the most part during the period 2001 to 2010, annual inflation averaged 9.6% and in the last five years it averaged 4.8%.

Table I. Moldova's Inflation

Year	1999	2000	2001	2002	2003	2004	2005	2006
Annual Inflation	7.8	38	32	5.5	11.6	11.5	11.9	14.1
Compound Inflation	1.078	1.49	1.96	2.07	2.30	2.58	2.88	3.29
Year	2007	2008	2009	2010	2011	2012	2013	
Annual Inflation	12.3	12.8	-0.1	7.4	7.6	4.6	4.6	
Compound Inflation	3.70	4.17	4.17	4.47	4.81	5.03	5.27	

Source: Central Bank of Moldova

A very important trend is demonstrated through table I. The line representing compound inflation gives very telling reason why all Moldovan utilities should have been revaluing the assets. Beginning in early 1999, about the time Union Fenosa purchased the utility, the value of the assets in lei have decreased by 400%. Given the tariff for electricity is set in lei it would have been prudent balance sheet management

to make it a practice of revaluing every couple of years to overcome the effects of the eroding asset base that is used both in the RAB calculation and depreciation.

Revaluation Methods

Indexation

Under this method, indices are applied to the historic cost (or previous revaluation) of the assets to arrive at the current value of the assets. The indices normally reflect the debasement of the currency through inflation. Such statistics are collected and tabulated by Statistical Bureau Departments and are widely circulated. Since these indices come in various periods that arrange from averages over periods to change from one point in time to another, selection of the proper index level must be given important consideration.

Moldova at present is an excellent example of this caution in selection process. If inflation has been consistent over time, the annual averages would be useful and present a good recommendation of current economic value. However, if in recent months there has been a rapid rise in the index, then consideration needs to be given to measuring inflation from point to point. In the Moldovan case, inflation has been under control in recent years, averaging 5%, but the rapid increase in exchange rate could be a leading indicator of changes to come. A year ago (March 2014) the local exchange was 13.4 to the US\$, but a rapid increase started around the beginning of the first quarter. It rose to 20.8 on 2/19/2015. Given these uncertain circumstances, the choice of index must be made to reflect the underlying economic environment.

Replacement Values

- Land values can be estimated by using recent prices for similar plots of land sold in the area. However, certain adjustments will have to be made for the plus and minus points of the land possessed by the company.
- Buildings values can be estimated by a realtor, construction engineer or chartered appraiser.
- Plant & Machinery: Replacement cost can be obtained from suppliers of the assets concerned. This may not be possible if brands are not available in the market due to closure of companies manufacturing them. In the event that the equipment has multiple purposes, such as earth moving equipment, trucks or barges, directly comparable equipment can be located and their prices used.

Electricity poses some difficulties as the equipment is specialized and technological improvements have made today's equipment more advanced than equipment manufactured 20 years ago. Improvements in steel, lines, concrete foundations and even treatment of poles make replacement cost an issue. Moldova is a particularly good example as the system was constructed during the Soviet period. Soviet construction had their own quality standards that in many cases did not meet the same Western standards.

Appraisal Method

Under this method, technical experts are called in to carry out a detailed examination of the assets with a view to determining their fair market value. The factors which are considered in determining the value of an asset are as follows:

- Date of purchase.
- Extent of use i.e. single shift, double shift, triple shift.
- Type of asset. Whether the asset is a general purpose or special purpose asset?
- Repairs & Maintenance policy of the enterprise.
- Availability of spares in the future, mainly in the case of imported machines.
- Future demand for the product manufactured by an asset.
- If the asset is part of a bigger fixed asset, the life of the latter is crucial

Appraisal is much easier if the good is tradable, has a normal resale market and has multiple purposes. Electricity unfortunately is largely a single purpose items which means it can be used for electrical purposes or discarded. As such technical experts need the ability to incorporate the above factors into reaching an appraised value.

Comparison of the Three Methods

If the purpose of the revaluation is largely to adjust for the debasement in the currency, the indexation method is more than adequate procedure. It is fast, inexpensive to undertake and can be undertaken with little external help. For regulatory purposes it is the optimal.

The other two methods are special purpose and their undertaking is both expensive and time consuming. The expensive part is collecting the necessary comparable data and hiring of the specialized technical experts that would both know the type of equipment being evaluated and the history of such equipment in order to know the technological differences through time. For such an investment in time and labor for an independent valuation, a large transaction is involved. This transaction could be either lending (credit), actual purchase and sell of the entire company or a divestiture of a subsidiary.

Conclusion and Next Steps

By every measure ANRE has performed according to international best practice in this area. When requested to accept revaluation of assets they accepted it. Although there was a contention with the TSO over the method of revaluation that ended up in the legal system, ANRE was judged to be fair in their assessment and won the case. The issue there was the method of revaluation. ANRE accepted the index approach which was correct for the circumstances. The TSO wanted to use the replacement cost method which would have tripled the Regulated Asset Base.

As for next steps, I identified what I thought was an issue with depreciation. In speaking with Union Fenosa it was asked what their average lifetimes for assets was in the filings for tariff. The answer was 27 years. From experience this answer is very high for distribution assets. Lines and poles should be 20 years, transformers 5-10, substation infrastructure around 20 years and service vehicles 5-15 years depending on the vehicle. This point needs to be investigated at some point as the distribution system is not receiving enough return to recover their assets base.

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