Review and Analysis of Certain Economic and Financial Aspects in The Pindyck Report – Key Findings

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Contents

1. Introduction

This report ("**Report**") has been prepared by PricewaterhouseCoopers Advisory Ltd. ("**PwC Israel**") at the request of Israel Chemicals Ltd. ("**ICL**" or the "**Company**") to address certain economic and financial aspects in the report authored by Professor Robert S. Pindyck and Analysis Group, Inc., dated April 24, 2014 and titled "*A Framework for the Taxation of Natural Resources in Israel*, " ("**Pindyck Report**") in connection with the on-going review by the State of Israel of its policy with respect to royalties and taxes levied on the extraction of natural resources within the State of Israel.

This Report has been prepared solely for the purposes stated herein and should not be relied upon for any other purpose.

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The information used by PwC Israel in preparing this Report has been obtained from a variety of sources as indicated within the Report. While our work has involved analysis of financial information and/or accounting records, it has not included an audit in accordance with generally accepted auditing standards. Moreover, except where otherwise stated in the Report, we have not subjected the financial information in the Report to checking or verification procedures. Accordingly we assume no responsibility and make no representations with respect to the accuracy or completeness of any information provided to us, except where otherwise stated herein, and no assurance is given.

Our conclusions are based upon the information available as of the date of writing. Economic conditions, market factors and changes in the performance of the business may result in our conclusions becoming quickly outdated.

If you have any questions or require further information, please do not hesitate to contact Dr. Tzur Fenigstein at 03-7954408.

Yours faithfully,

PricewaterhouseCoopers Advisory Ltd.

2. *Purpose of the Report*

This Report addresses certain economic and financial aspects relating to the application of the scheme selected by the Committee for the Assessment of Policy Regarding Government Take Received from the Use by Private Entities of National Natural Resources ("**Sheshinski Committee**" or the "**Committee**") for the taxation of profits from natural resources in Israel, as proposed by Prof. Pindyck in the Pindyck Report.

Among several schemes, the Committee, following Prof. Pindyck, has adopted a taxation scheme proposed by him, wherein any operating profits from the extraction of mineral resources exceeding a return on capital investments threshold would be taxed (the "**Return on Investment Scheme**" or the "**Scheme**").

In this Report, while not providing an opinion as to the appropriateness of the scheme selected by the Sheshinski Committee, we present an analysis as to the manner in which Prof. Pindyck, and the Sheshinski Committee, apply this Scheme, and provide our opinion as to the right way this Scheme should be implemented.

In the Report we cover the following issues relating to the Return on Investment Scheme:

- Review of the selected Scheme
- Examination of the manner in which the selected Scheme is applied
- Assessment of the assumptions based on which this Scheme is applied
- Proposing the appropriate application of the selected Scheme.

It should be noted that we only analyze in our Report certain and specific issues that we found relevant and not all possible matters regarding the Pindyck Report or other related reports.

3. *Executive Summary*

In his report, Prof. Pindyck proposes a scheme for the taxation of "excess profits" generated from the extraction of natural mineral resources in Israel by imposing additional tax on these profits (Mineral Resource Tax). This Scheme - the Return on Investment Scheme - was adopted by the Sheshinski Committee.

According to the Return on Investment Scheme, the Mineral Resource Tax should be imposed on profits that exceed the "normal" rate of return on a company's investment, which according to Prof. Pindyck is 11%, based on his derivation of what he calls "*a normal rate of return*" from a sample of mining companies.

This Report has been prepared with the purpose of reviewing and analyzing the application of the Scheme, in particular with regard to ICL. The Report, however, does not provide an opinion regarding the appropriateness of the Scheme.

We identified two fundamental deficiencies in the application of the Return on Investment Scheme, both with regard to the return and with regard to the investment:

A. Rate of Return: The rate of return on capital as calculated by Prof. Pindyck is incorrect. Our findings show that correcting Prof. Pindyck's errors results in a rate of return of around 22% (as opposed to the 11% proposed).

B. Invested capital: The asset base on which the return on investment is calculated is not defined by Prof. Pindyck. The Committee refers in this regard to "*the depreciated balance of the corporate assets*." In our opinion, the asset base on which the return on investment is calculated, should include the fixed assets at their **replacement value**, the working capital and the intangible assets, thus ensuring that the Company receives a normal return on its entire capital investment.

4. Review and Analysis of the Application of the Return on Investment Scheme

4.1. Introduction

Prof. Pindyck proposes a scheme for the taxation of "excess profits" generated from the extraction of natural mineral resources in Israel by imposing additional tax on these profits (Mineral Resource Tax). This Scheme - the Return on Investment Scheme - was then adopted by the Sheshinski Committee.

According to the Return on Investment Scheme, the Mineral Resource Tax should be imposed on profits that exceed the "normal" rate of return on a company's investment, which according to Prof. Pindyck is 11%. Prof. Pindyck has derived the "*normal rate of return*" from a sample of mining companies (the "**Mining Companies**"). This section of the Report reviews and analyzes the application of the Return on Investment Scheme by Prof. Pindyck and the Sheshinski Committee, as it relates to ICL.

In what follows, we do not provide an opinion regarding the appropriateness of the Return on Investment Scheme in the case of mineral mining in Israel in general and ICL in particular, but rather assess whether the Return on Investment Scheme is properly applied or should be applied in a different manner.

As presented below, we identified two fundamental deficiencies in the application of the Return on Investment Scheme:

A. Rate of Return: The rate of return on capital as calculated by Prof. Pindyck is incorrect. Our findings show that correcting Prof. Pindyck's errors results in a rate of return of around 22% (as opposed to the 11% proposed).

B. Invested capital: The asset base on which the return on investment is calculated is not defined by Prof. Pindyck. The Committee refers in this regard to "*the depreciated balance of the corporate assets*." In our opinion, the asset base on which the return on investment is calculated, should include the fixed assets at their **replacement value**, the working capital and the intangible assets, thus ensuring that the Company receives a normal return on its entire capital investment.

4.2. The Return on Investment Scheme

4.2.1. General

To derive the rate of return under the Return on Investment Scheme, Prof. Pindyck employs the Capital Asset Pricing Model ("**CAPM**"), wherein the rate of return is derived from market data, based on the following formula:

$$\boldsymbol{r_E = r_f + \beta\, x\, (r_m - r_f)}$$

$r_f -$ *risk free rate*

$r_E -$ *expected return on a company's equity*

$\beta -$ *beta*

$r_m -$ *the expected return of the overall capital market*

In order to determine the 11% return on capital, Prof. Pindyck identified two SIC codes at the two-digit level that capture the types of mining activities likely to be considered for future taxation. SIC Code: "10" contains metal mining companies and SIC Code: "14" contains companies engaged in mining and quarrying of nonmetallic minerals, except fuels.

Next, Prof. Pindyck identified the companies within those SIC codes with market capitalizations in excess of USD 1 billion. According to Prof. Pindyck, this subset of large mining companies provides a sufficient number of public companies from which to obtain a reasonable estimate of an industry beta[1].

Of this subset, Prof. Pindyck selected nine companies (the Mining Companies), which in his opinion are collectively representative of the mining industry for the purpose of his analysis.

Next, for each of the Mining Companies, Prof. Pindyck computed the beta of the stock (i.e., the equity beta or levered beta) using regression analysis to estimate the relationship between the return on the stock and the return on the overall stock market[2].

Using the MSCI U.S. Equity Index benchmark, Prof. Pindyck calculated the simple average, the average within the 25th to 75th percentiles, and the median unlevered betas for the sample of Mining Companies to be 0.40, 0.41, and 0.43, respectively. Using the MSCI World Index benchmark, Prof. Pindyck calculated the simple average, the average within the 25th to 75th percentiles, and the median betas for the Mining Companies to be 1.23, 1.23, and 1.20, respectively. With the resultant unlevered beta of the Mining Companies generally estimated to be clustered in the rough range of 0.4 to 1.2, using the MSCI World Index, ICL's beta is in the middle of this range at 0.8[3].

[1] Pindyck Report p. 29, para. 92

[2] Specifically, the regression equation is: $r_E - r_f = \alpha + \beta \times (r_M - r_f)$, where r_E is the return on the stock, r_M is the return on the broad capital market (which he chose the MSCI World Index and MSCI U.S. Equity Index, to represent), rf is the return on a riskless investment (such as short term Treasuries), and beta (β) is the regression coefficient (or slope), using five-year weekly data for each company in the regressions.

[3] Pindyck Report p. 30, para. 95

In order to determine a rate of return on capital for the purpose of the Mineral Resource Tax, Prof. Pindyck applied CAPM using a risk-free rate ("**RFR**") of 2.64% derived from U.S. Treasury Bond yields and an equity risk premium ("**ERP**") of 7%.

Prof. Pindyck concluded that the CAPM-based pre-tax rate of return estimate is in the range of 7.4% to 15%, but arbitrarily narrowed it to a range between 9% and 13%, concluding with an approximate average of 11% (the pre-tax rate of return is based on a simple gross-up by dividing the measured rate of return by 1- 26.5%[4])[5].

As described above, Prof. Pindyck uses the CAPM framework to estimate the "*expected or normal rate of return*" that an investor can earn from a typical mining industry project[6]. According to Prof. Pindyck this return is represented by the derived approximate average of 11%. According to the Pindyck Report, this return should be multiplied by a company's capital asset base to derive the threshold operating profit, above which a Mineral Resource Tax should be applied[7].

Based on our experience in many other cases, we believe that the way Prof. Pindyck applied CAPM should be adjusted significantly. We have identified two types of error:

- Errors related to the calculation of the rate of return;
- Errors related to the value of invested capital.

The following adjustments are based on both finance theory and lessons from practice.

In the following discussion we go through each error, explain it, and present the implication of correcting it.

We believe that in order to achieve the goals of the Sheshinski Committee and to act according to economic considerations, these errors should be corrected.

4.2.2. Calculation of the Rate of Return

Risk Free Rate

Prof. Pindyck derives an RFR of 4.14% based on the average yield of 20-year U.S. Treasury Bonds over the past 10 years adjusted downward by 1.5%, reflecting the difference between the equity market risk premium of U.S. equity market returns over the average return of long term U.S. Treasury Bonds (6.3%) and short term U.S. Treasury Bills (7.8%) as measured over the period between 1946 and 2012 [8], resulting in an expected average short term RFR of 2.64%[9].

While this calculation of the risk free rate is needlessly complicated, it is also inconsistent, when taken with the further calculation of the risk component of the rate of return, as explained below.

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[4] Israel corporate tax rate
[5] Pindyck Report p. 32, para. 100
[6] Pindyck Report p. 28, para. 88
[7] Pindyck Report p. 34, para. 111
[8] Ibbotson SBBI, 2013 Classic Yearbook, Morningstar Inc., 2013, para. 11, 23. According to Ibbotson, from 1946-2012, the U.S. equity market returned a 6.3 percent premium to long-term U.S. Treasury Bonds, and a 7.8 percent premium to short-term U.S. Treasury Bills. This implies an average spread of 1.5 percent between long-term and short-term Treasury securities.
[9] Pindyck Report p. 31, para. 97

This inconsistency stems from the fact that, for the calculation of the risk component of the rate of return according to CAPM, Prof. Pindyck uses an Equity Risk Premium (ERP) of 7% (instead of the 7.8% mentioned above with regard to short term Treasury Bills), based on the premium of the return of the S&P 500 index over the return on U.S. Treasury Bills over the past several decades[10].

Hence, the estimates of the RFR and the ERP are inconsistent (as the first is based on the 7.8% premium of U.S. equity market returns over the average return of short term U.S. Treasury Bills as measured over the period between 1946 and 2012 while the latter is based on the 7% premium of the return of the S&P 500 index over the return on U.S. Treasury Bills over the past several decades).

Once such inconsistency is corrected, the rate of return should be increased by 0.96%, the multiplication of a beta factor of 1.23 (see below) and 0.8% (the difference between an ERP of 7% and an ERP of 7.8%).

Furthermore, according to the Second Pindyck Report, with regard to the estimated rate of return for natural gas investments in Israel, Prof. Pindyck states that the RFR should be based on an average yield on 20-year U.S. Treasury Bonds over the past **20** years of 5.17%[11] as opposed to an average yield on 20-year U.S. Treasury Bonds over the past **10** years of 4.14% Prof. Pindyck uses in the Pindyck Report.

Correcting for this error will increase the rate of return by another 1.03%.

Beta Estimation

According to the Pindyck Report, the betas of the Mining Companies are based on a regression analysis of the historical returns on the stocks of the Mining Companies against the return on the overall stock market using the MSCI U.S. Equity Index and MSCI World Index, resulting in a range of unlevered betas of 0.4 and 1.23, respectively.

However, according to the accepted International Investor approach (which Prof. Pindyck himself adopts[12]) only the MSCI World Index should be considered for the beta estimation (deriving Prof. Pindyck's high end of the range of pre-tax rate of return estimate of 15%) rather than the two indexes (resulting in Prof. Pindyck's broad range estimate of rate of return of 7.4% to 15%). The MSCI U.S. Equity Index is simply not representative as an international Index and should not be used to estimate the beta factor.[13]

Moreover, Prof. Pindyck himself, when estimating the rate of return for the oil and gas industry in Israel[14] uses only the MSCI World Index.

Accordingly, only the 1.23 beta which is based on the MSCI World Index should be included in the calculation of the rate of return. Using the right index will bring the rate of return to be 15%. It should be noted that this rate of return is before all other required adjustments.

[10] Pindyck Report p. 32, para. 99
[11] Second Pindyck Report, p. 5, para. 16
[12] "These risks are largely diversifiable by investors through holding the stocks of companies operating in different areas of the world," Pindyck Report p. 32, para. 99
[13] The fact that the ERP is based on another U.S. equity index – the S&P 500 does not change this conclusion.
[14] Second Pindyck Report, p. 3, para. 12

Country Risk Premium ("**CRP**")

Country risk refers to additional risk associated with investing in a particular country. A component that reflects country risk (CRP) should be incorporated in the rate of return.

Country risk differs between countries according to risks specific to each country. Whereas countries like the U.S., Germany or Japan are considered countries with relatively minimal risk, Israel is riskier. This is evident from the lower rating attributed to the Israeli economy by the rating agencies compared to the U.S.'s, and is reflected in higher government bonds yields or Credit Default Swap (CDS) premiums. Hence, the rate of return of an Israeli operation like that of ICL should include a country risk premium.

Prof. Pindyck did not use such premium. Although he admits that Israel is characterized with particular risks, he thinks these should not be necessarily taken into account in the CAPM: "*However, given that Israel faces a heighted risk of terrorism and military conflicts, and that energy facilities located in Israel are particularly at risk, it is necessary to consider whether one should incorporate Israel-specific risks into the equity risk premium estimate. I am aware that academics are divided on whether it is appropriate to use a country-specific equity risk premium. However, as previously discussed in the First Pindyck Report, I believe that it is not necessary to include any country-specific risk premium in the CAPM, because these risks are largely diversifiable by investors through holding the stocks of companies operating in different areas of the world*".[15]

However, in order for the entire country risk to be diversified away, two conditions must be met. These conditions are, as prof. Aswath Damodaran - one of the most important valuation experts in the world - puts it:

1. *"The marginal investors—i.e., active investors who hold large positions in the stock—have to be globally diversified. If the marginal investors are either unable or unwilling to invest globally, companies will have to diversify their operations across countries, which is a much more difficult and expensive exercise.*
2. *All or much of country risk should be country specific. In other words, there should be low correlation across markets. If the returns across countries are positively correlated, country risk has a market risk component, is not diversifiable, and can command a premium. Whereas studies in the 1970s indicated low or no correlation across markets, increasing diversification on the part of both investors and companies has increased the correlation numbers. This is borne out by the speed with which troubles in one market can spread to a market with which it has little or no obvious relationship—say Brazil—and this contagion effect seems to become stronger during crises."*

Prof. Damodaran concludes that -

"Given that both conditions are difficult to meet, we believe that on this basis, country risk should command a risk premium."[16]

Based on the above, we believe that country risk is not diversifiable and should thus be reflected by an adjustment to the rate of return.

[15] Pindyck Report p. 32, para. 99
[16] www.Qfinance.com – Measuring Country Risk, Aswath Damodaran

However, even if country risk is diversifiable, it should still be incorporated in the rate of return, for the following reason: according to CAPM, non-diversifiable risks should be reflected in the expected cash flows (or profits, for that matter) whenever possible. This is, however, impractical in the case of country risk as the number; size and probability of all specific risks to be considered under "country risk" cannot be properly estimated. Therefore, in practice these risks are incorporated in the rate of return. Moreover, such risks can be more reliably taken into account within the rate of return – as they usually are - using the differences between country ratings as mentioned above.

In this context, it is worth quoting the following from the book, The Real Cost of Capital, "*it is rarely the case that cash flows are adjusted to country risks, for the simple reason that it is difficult for a manager of a particular business or investment to make an objective assessment of the probability or impact of such risks… we have assumed that cash flows are not adjusted for country risk factors, and hence it is appropriate to include an uplift for country risk in the WACC calculation for an international investor*"[17].

Thus, the CRP reflects an *extra* risk, from the perspective of an international investor, of investing in riskier regions of the world, such as Israel, one that should be reflected in a company's cost of capital, or rate of return.

We note that Prof. Pindyck, when recommending the rate of return for the oil and gas industry did not include in it CRP. While not expressing an opinion regarding the need to include CRP in the rate of return for the oil and gas industry, we nonetheless believe that ICL is far more exposed to risks associated with country risk, which therefore requires the inclusion of CRP in its rate of return. These risks, over and above those to which the oil and gas industry is exposed, include:

1. ICL has a "Golden Share" owned by the Government of Israel that allows the Government to restrict or even prevent the transfer of a controlling interest in the Company, thereby severely limiting its marketability (see, for example, the Minister of Finance opposition to a potential acquisition by Canada's Potash Corporation which halted any attempts to reach a deal. To our knowledge this is not the case in the oil and gas industry.
2. Most of the oil and gas production and distribution is executed outside of Israel, some of which even outside Israel's economic waters. Hence many of the risks associated with operating within Israel, to which ICL is exposed, do not apply to the oil and gas companies.
3. ICL is a labor-intensive company. This compels ICL to comply with strict labor laws and regulations, collective agreements and trade unions. Oil and gas companies, on the opposite, are far less labor-intensive and in fact employ very few, non-unionized employees.
4. Furthermore, the Company's labor cost (that constitutes approximately 22% of operating expenses in 2013), are paid in NIS, while revenues are USD dependent. This imposes on ICL a foreign exchange risk, to which the oil and gas industry is hardly exposed due to its low cost base.
5. ICL must comply with various regulatory restrictions in different aspects that strongly influence its profitability and growth (e.g. the Dead Sea salt harvest agreement, and the Minister of Health's opposition to phosphate mining at Sde Barir). While oil and gas companies are also subjected to regulatory restrictions, to our knowledge, it is far more anticipative, hence less risky.

[17] The Real Cost of Capital: a Business Field Guide to Better Financial Decisions, by Tim Ogier, John Rugman and Lucinda Spicer, Prentice-Hall, 2004.

For the purpose of applying the CRP we propose that it be taken from Damodaran's calculation. This calculation is based upon Moody's local currency sovereign rating for Israel, by finding the equivalent average default spread of similarly rated countries, then converting it into a country risk premium by scaling the default spread upwards by 1.5 to reflect the higher risk of equity in the market, thus deriving a country risk premium of 1.05%[18]

Taking into account the CRP within the rate of return will increase the rate of return by 1.05%.

Size Premium ("SP")

Prof. Pindyck does not incorporate a Size Premium in the rate of return calculation. We believe that a size premium should be included within the rate of return based on empirical research and common practice for smaller companies, which are inherently riskier than larger ones. Investors in small-to-medium sized companies expect a higher rate of return on their investments. - "*Investors are compensated for taking on this additional risk by the higher returns provided by small companies*"[19]

In the context of global capital markets, ICL counts as a medium-sized company. According to Ibbotson 2013 Yearbook, the expected premium for a company with a market cap in the range of USD 7,748 million and USD 17,541 million, such as ICL, is 0.76%.

Therefore applying an SP will increase the rate of return by 0.76%.

Gross-up Method

CAPM provides an estimate of the after-tax rate of return, which needs to be grossed-up to the pre-tax rate of return for the purpose of determining excess profits. The gross-up method used by Prof. Pindyck converts the (estimated) after-tax rate of return to the pre-tax rate of return by dividing the first by one minus the tax rate[20]. This method is, however, mathematically wrong for the purpose of this analysis. Such a simplistic gross-up can be used only when the analysis period is infinite.

In ICL's case, however, the concession for the extraction of natural resource is for a finite period (the concession for potash is until 2030, and for the other minerals is even less than that). This means that mathematically, the way that Prof. Pindyck performed the gross-up is incorrect. The example presented in Appendix 1 clarifies this.

This issue is highlighted in IAS 36, *Impairment of Assets*[21], *"discounting post-tax cash flows at a post-tax discount rate and discounting pre-tax cash flows at a pre-tax discount rate should give the same result, as long as the pre-tax discount rate is the post-tax discount rate adjusted to reflect the specific amount and timing of the future tax cash flows.* ***The pre-tax discount rate is not always the post-tax discount rate grossed up by a standard rate of tax****."*

Using the right gross-up method increases the pre-tax rate of return by 1.4% (see Appendix 1 for more details).

[18] Damodaran Online: http://pages.stern.nyu.edu/~adamodar/, Estimating Country risk Premiums, January 1, 2014. According to Damodaran, the 10-year CDS for Israel as of January 1, 2014 is even higher, at 1.53%
[19] 2014 Ibbotson SBBI Classic Yearbook p.109
[20] Pindyck Report p. 32, para. 101
[21] International Accounting Standard no. 36, para. BCZ85

Summary of CAPM Adjustments

As stated before, although we do not provide an opinion regarding the appropriateness of the Return on Investment Scheme, we believe its implementation by Prof. Pindyck includes significant errors.

The following table summarizes our adjustments as detailed above.

Adjustments to the Pre-tax Rate of Return

1	**Rate of return using beta based on MSCI World Index**	**15%**
2	(+) Risk free rate	0.96%+1.03% = 1.99%
3	(+) Country risk premium	1.05%
4	(+) Size Premium	0.76%
	CAPM adjustments inc. the simplified gross-up method	**3.8%/(1-tax rate) = 5.17%**
	Correction of the simplistic gross-up method	1.4%
	Adjusted rate of return	**21.6%**

The rate of return proposed by Prof. Pindyck includes significant errors. As seen in the table, after correcting these errors the rate of return is approximately 22%.

Historical Return on Capital

Prof. Pindyck estimates the rate of return on capital by applying CAPM to the sample of Mining Companies, and concludes that the rate of return is on average approximately 11%. This average is adopted by the Sheshinski Committee as the normative rate of return.

However, examining the Mining Companies' actual returns on capital reveals a totally different picture. Based on a normalized EBIT of the Mining Companies, the actual return displayed by the Mining Companies is well above their estimated CAPM rate of return as calculated by Prof. Pindyck.

The tables below show the range of actual returns on capital for the Mining Companies in the years 2011-2013, based on different definitions of asset base:

Return on capital - Fixed assets

	2011	2012	2013
Newmont Mining Corp	22.7%	15.0%	4.2%
Compass Minerals Intl Inc	37.5%	20.6%	27.4%
Martin Marietta Mtrls	9.1%	8.9%	12.1%
Freeport-Mcmoran CPR&GLD CLB	45.4%	25.1%	10.7%
Cliffs Natural Rsrcs Inc	21.9%	6.7%	7.7%
Hecla Mining Co	22.5%	6.8%	-0.1%
Southern Copper Co	79.5%	63.2%	36.9%
Globe Specialty Metals Inc	43.1%	21.0%	8.3%
Stillwater Mining Co	16.1%	4.9%	12.9%
Israel Chemicals Ltd	72.5%	50.5%	31.9%
Average	**37.0%**	**22.3%**	**15.2%**

Source: PwC Analysis

Return on capital - Fixed assets and working capital

	2011	2012	2013
Newmont Mining Corp	21.1%	13.8%	3.9%
Compass Minerals Intl Inc	25.4%	14.3%	19.3%
Martin Marietta Mtrls	7.3%	7.0%	9.5%
Freeport-Mcmoran CPR&GLD CLB	40.3%	22.0%	10.1%
Cliffs Natural Rsrcs Inc	20.7%	6.4%	7.3%
Hecla Mining Co	22.5%	6.8%	-0.1%
Southern Copper Co	66.6%	54.3%	33.3%
Globe Specialty Metals Inc	27.5%	15.5%	6.2%
Stillwater Mining Co	14.5%	4.3%	10.6%
Israel Chemicals Ltd	40.5%	32.1%	21.6%
Average	**28.6%**	**17.7%**	**12.2%**

Source: PwC Analysis

Return on capital - Fixed assets, working capital and intangible assets

	2011	2012	2013
Newmont Mining Corp	20.7%	13.6%	3.8%
Compass Minerals Intl Inc	23.8%	13.2%	18.0%
Martin Marietta Mtrls	5.6%	5.4%	7.4%
Freeport-Mcmoran CPR&GLD CLB	39.7%	21.7%	9.7%
Cliffs Natural Rsrcs Inc	18.6%	6.2%	7.2%
Hecla Mining Co	22.5%	6.8%	-0.1%
Southern Copper Co	65.2%	53.4%	32.9%
Globe Specialty Metals Inc	23.9%	14.1%	5.7%
Stillwater Mining Co	14.5%	4.3%	10.6%
Israel Chemicals Ltd	35.0%	28.0%	18.9%
Average	**26.9%**	**16.7%**	**11.4%**

Source: PwC Analysis

As is clearly seen in the tables above, in comparison to the actual returns achieved by the Mining Companies, the 11% rate of return proposed by Prof. Pindyck is very low, not even reaching the lower-end of the range, regardless of the asset base selected.

Using an asset base of only the fixed assets, in accordance with the Scheme proposed by the Sheshinski Committee, derives an average ROIC of 25% in 2011-2013. This clearly implies that the

proposed rate of return of 11% is unreasonably low from a comparative angle and supports our previous finding that the right rate of return is 22%.

4.2.3. Invested Capital

Asset Base

As noted earlier, the application of the rate of return for the purpose of calculating the Mineral Resource Tax is on a company's invested capital. The Sheshinski Committee interpreted this as "depreciated fixed asset base." According to finance theory, invested capital should include all operating assets contributing to generation of operating profits, including, in addition to fixed assets, working capital and intangible assets.

Investors expect to receive compensation by way of financial return on the entire investment made by the company. This includes its fixed asset base, but it also includes working capital and intangible assets, all of which constitute company assets that contribute to generating operating profits, or in other words, the company's return on investment. This does not depend whether or not the assets appear on the balance sheet.

Asset Value

Prof. Pindyck does not explicitly address the question of how to measure the value of the invested capital on which the return on capital is calculated.[22] The Sheshinski Committee calls for the use of the **book value** of the depreciated assets as stated in the company's balance sheet (after performing required adjustments)[23]

However, to ensure a proper return, the assets should be measured based on their economic value. And in order to measure the asset base in a way that reflects the economic value of the assets, the assets should be measured by their replacement value.

The replacement value of an asset is the amount that an entity would have to pay to replace that asset at the present time.

The use of replacement value ensures that ICL will receive the proper return on its investments.

This can be substantiated by comparing ICL to a company that has presently started a similar business. This hypothetical company should receive a return on its investment, the value of which reflects the replacement value. Accordingly, there is no reason to deprive such a return from ICL.

An example of the application of replacement cost for the very same reason is found in the case of the telecommunications industry in Israel, when the Ministry of Communication decided to choose the Long Run Incremental Cost (LRIC) method for the calculation of the cost of call completion. According to this method, a hypothetical cellular company is "founded," where its asset base is valued based on replacement cost (adjusted to functionality), thereby deriving an economic depreciation.

[22] Pindyck Report, p. 35, para. 112
[23] Sheshinski Draft Report, p. 95, footnote no. 65

In ICL's case, the difference between the replacement value of the Company's fixed assets and their book value is attributed to two factors:

1. Erosion due to inflation over the life of the assets;
2. Excessive (non-economic) depreciation.

Intangible Assets

As mentioned above, the asset base of the company that should serve to calculate the normative return includes, in addition to the fixed assets and working capital, intangible assets as well.

The term "*intangible assets*" refers to "*an identifiable non-monetary asset without physical substance*"[24]. An asset is a resource that is controlled by the entity as a result of past events (for example, purchase or self-creation) and from which future economic benefits (inflows of cash or other assets) are expected. Intangible assets conform to this definition. Together with the two other asset categories they make the business work and are often the primary contributors to the earning power of the enterprise. Accordingly, just as part of the company's profits is attributed to its tangible assets, they should also be partially attributed to its intangible assets.

In the case of ICL, the Company has also intangible assets relevant to its extraction operation. The main assets are operational know-how, or technology, that makes its extraction process more efficient. This is evident from a comparison between ICL's Dead Sea Works and the other company extracting potash from the Dead Sea, Arab Potash Corp, Jordan ("**APC**"), according to which ICL processes potash at a cost of USD 75/ton less than APC[25].

A portion of these cost savings is attributable to ICL's specific technology and knowhow embedded in the production processes of potash ("**Know-how/technology**"), over and above identified other factors such as economies of scale and the use of gas rather than oil to generate power for its operations.

ICL developed this Know-how/technology independently, the benefits of which are not related to state natural resources but attributable solely to ICL's research and development efforts over the years. Accordingly, the value of this Know-how/technology (ICL's intangible assets) should be included in the invested capital upon which the return on capital is to be applied for the calculation of the Mineral Resource Tax.

Working Capital

No business can operate without investments in working capital. This is true for ICL as well.

Therefore, working capital should be included as part of the invested capital.

Capital Asset Base

For the purpose of this analysis, the following table details the value of the capital asset base that should be considered for the Return on Investment Scheme. Values provided are as at 31 December, 2013 on a segment-by-segment basis:

[24] International Accounting Standard no. 38, *Intangible Assets*
[25] FTI Report, p. 18, para. 3.27

ICL's Capital Asset Base

(in USD millions)	Potash	Bromine	Magnesium	Phosphate	Notes:
Original:					
Depreciated fixed asset base	1,286	530	34	100	
Additions:					
Adjustment to replacement value	851	391	8	105	*1*
Working capital	204	209	26	61	*2*
Acquired intangible assets	-	7	-	-	*3*
Know-how/technology	NQ	NQ	NQ	NQ	*3*
Total	2,341	1,137	68	266	

* Not Quantified

Notes

1. **Replacement value -** to measure properly the capital asset base, in such a way that reflects the economic value of the fixed assets, the asset base should be adjusted to reflect the replacement value of the assets.
2. **Working capital** - The capital investments should also include working capital balances.[26]
3. **Know-how/technology –** ICL's know-how/technology should be part of its capital asset base as it contributes to operating profits.

4.2.4. Other Issues

Asymmetric Taxation Scheme

The Return on Investment Scheme is asymmetric in a way that may significantly over-tax ICL in certain scenarios.

Prof. Pindyck's proposal includes a "*carry-forward feature*" that allows for a shortfall between the operating profits and the normal return on capital to be carried forward and applied as an offset in future years[27]. Indeed, when future years present excess profits (profits above the normal rate of return), this carry-forward feature is effective. However, when this is not the case, and, for example, sub-normal profit years follow above-normal ones, the carry-forward feature becomes ineffective as the offset mechanism will not apply.

In fact, as seen in recent years, global potash prices are subject to significant volatility, and thus a scenario of low profits or losses near or through the end of ICL's concession period, that follow more

[26] Due to insufficient information, value does not include working capital which relates to certain ICL factories.
[27] Pindyck Report, p. 35, para. 115

profitable years, is not unreasonable. In such a scenario ICL will not be able to benefit from the carry-forward losses for tax purposes.

To exemplify this problem we employed a Monte-Carlo simulation that ran 1.5 million price scenario iterations, and applying the Return on Investment Scheme, we found that there are specific scenarios in which ICL would be unable to fully (or at all) benefit from carry-forward losses for tax purposes, ultimately resulting in an expected tax-shield of less than 11% (See Appendix 2 for more details).

It is therefore recommended that the Committee consider a mechanism to appropriately compensate ICL at the end of the concession period in scenarios where the normative tax-shield cannot be fully exploited.

Comparison of the Return on Investment Scheme to the Profitability Scheme

Prof. Pindyck presents an alternative scheme to impose a Mineral Resource Tax. Under this scheme - the Profitability Scheme - Prof. Pindyck proposes a taxation scheme wherein any operating profits exceeding what he calls a "*normal level of profit*" of 15% will be subject to a Mineral Resource Tax.

Comparing the Return on Investment Scheme with the Profitability Scheme reveals that they are not equivalent as they should be, and in fact embody different tax shields and government takes.

In order to compare the Return on Investment Scheme to the Profitability Scheme, we performed an analysis of ICL's financial forecast for potash under different scenarios of potash prices, based on ICL's sales volume forecast for 2014-2018.

This analysis shows that when taking the proportion of tax shield (the level of earnings below which the proposed Mineral Resource Tax is not assessed) to sales under the Return on Investment Scheme, in only very few scenarios do this ratio exceeds 15% and mostly it's below this profitability level. This indicates that the Return on Investment Scheme and the Profitability Scheme are not equally effective, and that, in the vast majority of cases, the 11% proposed under the Return on Investment Scheme is far too low of a threshold to be used to assess the proposed Mineral Resource Tax (See Appendix 3 for more details).

5. Conclusion of Analysis

This Report addressed certain economic and financial issues relating to the application of the scheme selected by the Sheshinki Committee for the taxation of profits from natural resources in Israel, as proposed by Prof. Pindyck in the Pindyck Report.

We have identified fundamental deficiencies in the Scheme employed by Prof. Pindyck in calculating the rate of return (11%).

Following our adjustments, the rate of return should be approximately 22%

Additionally, the asset base referred to in the Pindyck Report, should include fixed assets at their replacement value, working capital and intangible assets including technology and knowhow, thus ensuring that ICL receives a normal return on the full extent of its investments.

A.1. Appendix 1 – Pre-tax gross-up calculation

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	WACC
Pre-tax	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
Tax (26.5%)	-26.5	-26.5	-26.5	-26.5	-26.5	-26.5	-26.5	-26.5	-26.5	-26.5	-26.5	-26.5	-26.5	-26.5	-26.5	-26.5	
Post-tax	73.5	73.5	73.5	73.5	73.5	73.5	73.5	73.5	73.5	73.5	73.5	73.5	73.5	73.5	73.5	73.5	
Discount factor	0.87	0.76	0.66	0.58	0.50	0.44	0.38	0.33	0.29	0.25	0.22	0.19	0.17	0.14	0.13	0.11	14.8%
Discounted Cash flow	**64.02**	**55.77**	**48.58**	**42.32**	**36.86**	**32.11**	**27.97**	**24.36**	**21.22**	**18.49**	**16.10**	**14.03**	**12.22**	**10.64**	**9.27**	**8.08**	

Present value of the after tax free cash flow	**442.05**

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
Pre-tax	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
Tax (26.5%)																	
Post-tax	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
Discount factor	0.82	0.68	0.56	0.46	0.38	0.31	0.25	0.21	0.17	0.14	0.12	0.10	0.08	0.06	0.05	0.04	21.6%
Discounted Cash flow	**82.21**	**67.59**	**55.57**	**45.68**	**37.56**	**30.88**	**25.38**	**20.87**	**17.16**	**14.10**	**11.60**	**9.53**	**7.84**	**6.44**	**5.30**	**4.35**	

Present value of the after tax free cash flow	**442.05**

Source: PwC Analysis

A.2. Appendix 2 – Monte Carlo Simulation output

Potash

Mean	10.50%
Percentile	
0%	4.40%
10%	9.50%
20%	11.00%
30%	11.00%
50%	11.00%
60%	11.00%
70%	11.00%
80%	11.00%
90%	11.00%
100%	11.00%

Source: PwC Analysis

Phosphate

Mean	10.20%
Percentile	
8.7%	0.00%
8.7%	10.00%
8.7%	20.00%
9.4%	30.00%
10.2%	40.00%
10.7%	50.00%
11.0%	60.00%
11.0%	70.00%
11.0%	80.00%
11.0%	90.00%
11.0%	100.00%

Source: PwC Analysis

A.3. Appendix 3 – Comparison of the Return on Investment Scheme to the Profitability Scheme

Sales

Potash Price (US$ per tonne)	2014	2015	2016	2017	2018
230	2,890,755,000	2,890,755,000	2,890,755,000	2,890,755,000	2,890,755,000
250	3,142,125,000	3,142,125,000	3,142,125,000	3,142,125,000	3,142,125,000
300	3,770,550,000	3,770,550,000	3,770,550,000	3,770,550,000	3,770,550,000
350	4,398,975,000	4,398,975,000	4,398,975,000	4,398,975,000	4,398,975,000
400	5,027,400,000	5,027,400,000	5,027,400,000	5,027,400,000	5,027,400,000
450	5,655,825,000	5,655,825,000	5,655,825,000	5,655,825,000	5,655,825,000
500	6,284,250,000	6,284,250,000	6,284,250,000	6,284,250,000	6,284,250,000
550	6,912,675,000	6,912,675,000	6,912,675,000	6,912,675,000	6,912,675,000
600	7,541,100,000	7,541,100,000	7,541,100,000	7,541,100,000	7,541,100,000
630	7,918,155,000	7,918,155,000	7,918,155,000	7,918,155,000	7,918,155,000

Tax Shield

Potash Price (US$ per tonne)	2014	2015	2016	2017	2018
230	460,883,451	444,944,885	334,985,669	172,283,532	-
250	460,883,451	481,919,490	499,244,862	512,859,567	522,763,606
300	460,883,451	481,919,490	499,244,862	512,859,567	522,763,606
350	460,883,451	481,919,490	499,244,862	512,859,567	522,763,606
400	460,883,451	481,919,490	499,244,862	512,859,567	522,763,606
450	460,883,451	481,919,490	499,244,862	512,859,567	522,763,606
500	460,883,451	481,919,490	499,244,862	512,859,567	522,763,606
550	460,883,451	481,919,490	499,244,862	512,859,567	522,763,606
600	460,883,451	481,919,490	499,244,862	512,859,567	522,763,606
630	460,883,451	481,919,490	499,244,862	512,859,567	522,763,606

Tax Shield/Sales

Potash Price (US$ per tonne)	2014	2015	2016	2017	2018
230	15.9%	15.4%	11.6%	6.0%	0.0%
250	14.7%	15.3%	15.9%	16.3%	16.6%
300	12.2%	12.8%	13.2%	13.6%	13.9%
350	10.5%	11.0%	11.3%	11.7%	11.9%
400	9.2%	9.6%	9.9%	10.2%	10.4%
450	8.1%	8.5%	8.8%	9.1%	9.2%
500	7.3%	7.7%	7.9%	8.2%	8.3%
550	6.7%	7.0%	7.2%	7.4%	7.6%
600	6.1%	6.4%	6.6%	6.8%	6.9%
630	5.8%	6.1%	6.3%	6.5%	6.6%

Source: PwC Analysis

A.4. Appendix 4 – Expert's Curriculum Vitae

Name of the expert: Dr. Tzur Fenigstein, CPA, Partner

Company: PricewaterhouseCoopers Advisory Ltd.

Location of Company: Trade Tower, 25 Hamered Street, Tel-Aviv, Israel.

Academic education:

- PhD in Philosophy from Tel-Aviv University, Israel.
- Master of Business Administration (MBA) degree (Cum Laude) from Tel-Aviv University, Israel.
- Bachelor degree in Accounting and Economics from Tel-Aviv University, Israel.
- Qualified as a Certified Public Accountant from the Institute of Certified Public Accountants in Israel.

Professional experience summary:

Dr. Tzur Fenigstein is a Partner at PwC Israel. He also leads the Valuation and Economics services practice of PwC Israel's Advisory group.

Selected professional engagements that Tzur Fenigstein has led at PwC Israel Advisory Ltd. Include:

- Valuations, economic studies and business plans for corporations and businesses from all sectors of the economy;
- Providing expert opinions on different economic issues as part claims lawsuits;
- Preparing position papers on macro-economic and micro-economic issues for various entities, in order to present their position with regard to structural changes in the economy; and
- Guidance and active support of a variety of economic projects for leading corporations.

A.5. *Appendix 5 – Main Sources of Information*

The main sources of information we relied on in order to prepare this Report are listed hereunder:

- A Framework for the Taxation of Natural Resources in Israel, Robert S. Pindyck and Analysis Group, Inc., April 24, 2014 ("**Pindyck Report**")
- Bloomberg data base
- Conclusions of the Committee for the Examination of the Fiscal Policy with Respect to Oil and Gas Resources in Israel, January 2011 ("**First Sheshinski Report**")
- Draft Conclusions for Public Comment of Committee for the Assessment of Policy Regarding Government Take Received from the Use by Private Entities of National Natural Resources, May 2014 ("**Sheshinski Draft Report**")
- Estimating the Normal Rate of Return for Midstream Natural Gas Investments in Israel, Robert S. Pindyck, November 13, 2010 ("**First Pindyck Report**")
- Estimating the Normal Rate of Return for Midstream Natural Gas Investments in Israel, Robert S. Pindyck, April 1, 2014 ("**Second Pindyck Report**")
- Ibbotson SBBI Classic Yearbook, 2013
- ICL management information and financial statements
- International Accounting Standard 36, *Impairment of Assets* ("**IAS 36**")
- Israel Chemicals Ltd., Second Submission to the Second Sheshinski Committee on Mining Royalty and Tax Regime Issues, June 2014, FTI Consulting ("**FTI**") ("**FTI Report**")
- J.P. Morgan North America Equity Research reports regarding the Mining Companies as mentioned in the Pindyck Report and defined in our Report:
    - Cliffs Natural Resources, 28 April 2014
    - Compass Minerals International, Inc., 5 June 2014
    - Freeport-McMoRan Copper & Gold, 24 April 2014
    - Globe Specialty Metals, 13 May 2014
    - LatAm Copper, 11 February 2014
    - Newmont, 28 April 2014
    - Silver Equities, 13 May 2014
    - Stillwater Mining, 8 May 2014
- Professor Aswath Damodaran's website
- Report on Investigation of Profitability of Companies Under Price Control (for the purpose of determining a price basis), Prof. Isaac Suari and Partners, 1996
- "*The Real Cost of Capital*", Tim Ogoer, John Rugman and Lucinda Spicer, 2004.