How Would Different Gas Prices Effect Israel

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Dr Gilead Fortuna, Senior Research Fellow Head of Center for Industrial Excellence at Samuel Neaman Institute for National Research

Ariella Berger, Head of Oil Alternatives & Energy Research, The Israeli Institute for Economic Planning

1. Short Term Fiscal Temptation vs Long Term Economic Opportunity

There is a temptation, particularly in the current harsh economic environment, to view natural gas through the short term lens of trading it. The immediate value can be considerable. The Treasury recently announced (Dec 2012) that 25% of Israel’s economic growth in 2013-14 is estimated to be from the natural gas finds. However, the Bank of Israel has made it clear that in this short term time frame, no increased employment is foreseen.

The long term lens looks at how natural gas can be used for greater value creation through manufacture. German company Ferrostaal GmbH, which specializes in industry, estimates that whilst trading gas can add value of between $5 and $8 per million Btu, convert that same gas to be traded as chemicals can add $10 to $40 per million Btu. In other words, investing in the mark-up can yield 100-600% more added value.

This added value can greatly contribute to Israel’s export output. Ferrostaal indicates strong global growth in Gas-To-Chemicals; 2-3% market growth until 2020 for fertilizers, ~2% growth for vehicle fuels and 5% for light weight materials.

Our estimation ranges for Israel’s added value options are:

Figure 1: Relative Added Value of Various End Uses
2. **The Panels’ Question**

In this light- and in the appropriateness of government intervention in the gas market – it is fitting that the consultative team to the 13th Herzilyah Conference Natural Gas Panel were interested in the effect of Israeli natural gas costing 50% more, or 50% less.

The exact question proposed was:

"What would be the effect on the Israeli market if the gas price (Tamar Wellhead Price) would be at $3, $6, $9 per million Btu"?

3. **Observations - Gas Prices and Economic Impacts**

The apparently simple question highlights some interesting observations.

a. **Cheaper gas benefits consumers and manufacturers whether the market is competitive or a monopoly**

Cheaper gas increases supply of products which is beneficial to the consumer.

Fig 2: Price Fall of US Natural Gas Resulted in More, Less Costly Gas Supply

![Graph showing the effect of US natural gas prices on quantity supplied.](source:EIA)

In a competitive local market, cheaper gas increases the supply of manufactured goods and pushes consumer product prices down.

In a non-competitive local market, though the price may not fall, but more manufacturers could enter the market, increasing product availability.
b. **Currently in Israel, smaller industries pay more for gas than larger industries**

Today, the playing field is uneven. Smaller industrial factories in Israel pay more for gas than larger factories. Hence the question highlights that if price is an issue then it can be tackled not just at the gas field wellhead price but also at the national transmission and distribution network level. This can create many more opportunities for smaller industries fast growth and added value to Israel’s economy.

**Fig 3: Snapshot of 2012 Size of Natural Gas Contracts vs Price**

For more information, the reader is directed to an article by Dr Gili Fortuna recently published on the internet Calcalist publication, at this link.

c. **Within an end-sector, gas prices/rises have an asymmetric economic impact**

In the case of electricity sector, in our estimation a 50% decrease in the gas price would cause a 20% fall in electricity prices.

However a 50% rise in the gas price would cause a 15% rise in the electricity cost.

The reason is that if the gas price increases considerably then the fuel basket which generates electricity would increase the component of cheap coal.

d. **Between end-products, gas prices/rises have an asymmetric economic impact**

1 BCM of natural gas can produce 1.8 million tones of fertilizer; the same amount of gas can produce 4 million barrels of oil equivalent transportation fuel.

Similarly, we note that it would take considerably more natural gas to generate Gas to Liquid drop-in-fuel compared to methanol fuel for the same distance traveled.

1 International Gas Union, Natural Gas Conversion Pocketbook.
Thus, to learn which end-product is most worthwhile one must take into account each potential product, including factors such as the market value, prices and volatility, investment required, employment created, and other economic output factors.

Indeed, in 2012 the American Chemistry Council published a report\textsuperscript{ii} detailing how cheaper gas would affect US manufacturing. To fully analyze the effect of cheaper US gas on the economy the report indicated the following should be studied:

- Direct impacts (employment, output, other fiscal - direct from a manufacturing sector)
- Indirect impacts (as above but via purchase from supply chain)
- Induced impacts (due to spending from those in the supply chain)
- Spillover (catalytic impacts - added productivity to economic performance and other sectors)

Fig 5: US: Economic Impact for Expanded Production of 8 Manufacturing Industries due to lower gas prices

![Bar chart showing economic impact]

Therefore a deep answer to the question posed by the panel is both necessary and – if answered fully - encompasses wide scope.

4. **Planned Survey With The Manufacturers' Association of Israel**

As a result of the question posed by the panel, there is ongoing work with the Manufacturers' Association of Israel to issue a survey to its members qualifying the effect of the gas price.

The survey was planned with Dr Gilead Fortuna of the Samuel Neaman Institute for National Policy Research and Ariella Berger of the Israeli Institute for Economic Planning.

The reader is referred to the Appendix to see the survey itself.

Full results were incomplete at the time this report went to press.
5. Wider Dilemmas Raised by the Work

The question raised by the panel sheds light on what the long term value of natural gas is to the Israeli economy. Analyzing such a question raises wide issues such as:

- Employment
- Product availability
- Effect of the cheaper cost of energy to citizen
- Effect of the cheaper cost of energy to manufacturing industry
- The future potential of Israel's petrochemicals industry
- Innovation
- Crossovers and clusters with other industries

The question asked by the panel raises more specific dilemmas, in particular:

- Is it in Israel's economic interest to reduce price of gas to a given specific end-sector which can create higher added value products?

- If this is a relevant interest for the State of Israel to consider, then-
  A. How much supply should have a reduced price?
  B. By what pricing mechanism
  C. To which end-product? How can such end-products be chosen?
  D. What should be the expected return for Israel's net economic interest?
  E. Where in the supply chain should price distortions in the name of net economic interest is redistributed to?
  F. What is the innovation spillover benefit?
  G. Crossovers and clusters with other industries

Together, the suggestion is that ongoing work is both necessary and of great importance.
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Authors:

Dr Gilead Fortuna, Senior Research Fellow Head of Center for Industrial Excellence at Samuel Neaman Institute for National Research

Ariella Berger, Head of Oil Alternatives & Energy Research
The Israeli Institute for Economic Planning

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APPENDIX: Survey, The Manufacturer's Association of Israel

- **Question 1:** What is the percentage of employees' productivity that is lost due to work-related factors? (Options: 0-5%, 6-10%, 11-15%, 15%+)

- **Question 2:** How many employees are involved in product development or design? (Options: 0-100)

- **Question 3:** What is the monthly salary for employees in the manufacturing sector? (Options: below 10,000, 10,000+)

- **Question 4:** How many employees are involved in marketing? (Options: 0-100)

- **Question 5:** What is the average age of employees in the manufacturing sector? (Options: below 25, 25-30, 30-35, 35+)

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<tr>
<th>Survey Question</th>
<th>Response Options</th>
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<tbody>
<tr>
<td>Question 1</td>
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