



The natural gas sector in post-revolution Egypt

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Abstract

This paper assesses the economic implications of the termination of the preferential agreement for exporting Egyptian natural gas to Israel in 2012. Abolishing the preferential treatment is simulated with the GTAP model and an updated GTAP database that reflects the actual natural gas production, trade shares, and cost structures in both countries. Results reveal that Egypt witnesses welfare gains, should the preferential treatment be abolished, while its overall production of gas decreases and the supply of gas to the domestic market increases.

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1. Introduction

The production of natural gas in Egypt has been increasing, while the production of oil has been decreasing since the mid-1990s (BP, 2011). Egypt is rapidly developing large gas reserves,

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which represented 15% and 13% of the total proven gas reserves in Africa in 2010 and 2014, respectively (BP, 2015). Gas production was approximating 61 billion cubic meters (bcm) in 2010; almost triple the production of ten years earlier. Until 2003, domestic consumption moved in tandem with production, leaving very little room for exports. However, five major gas projects developed between 2003 and 2004 (IMF, 2005) increased annual production such that Egypt became a significant net exporter in 2004 and was among the top 15 exporters in the world by 2010 (BP, 2011); enabling the sector to exceed 8% of Egyptian GDP.

In May 2004, a bilateral agreement was concluded to sell Egyptian gas to Israel at a preferential price below the world market price via an off-shore pipeline. In accordance with the 15-year contract, the state-owned Israel Electric Corporation would buy 1.2 bcm per year (bcm/y) of Egyptian gas annually beginning in July 2006, which would increase to 1.7 bcm/y just one year later (IMF, 2005). The agreement also included an option to extend the deal for five more years (IMF, 2005). This agreement effectively began in 2008. As a result, between 2008 and 2012, Egypt supplied Israel with about 40% of its domestically consumed natural gas.

There was public discontent in Egypt in opposition to the sale of below market price natural gas to Israel, particularly after the January 2011 revolution (Ratner, 2011). Accordingly, there have been over ten attacks on the pipeline since the eruption of the revolution, causing Israel's gas supply to be temporarily cut off (Afify & Fahim, 2011; Elyan, 2011). In addition, Israel is poised to become a natural gas producer and perhaps a natural gas exporter given the discoveries of major offshore natural gas reserves in 2009 and 2010 in the Mediterranean Sea near Israel (Ratner, 2011).

This paper analyzes the economic implications on the Egyptian economy of the termination of natural gas exports to Israel that was effective in 2012 due to the public discontent for exporting natural gas to Israel below the international price. The paper uses the preferential agreement in force prior to 2012 as a baseline. Thus, the paper also offers an *ex post* quantification of the impact of the preferential treatment of Egypt to Israel.

The following section provides an overview of the Egyptian gas sector. Subsequently, the applied model and the database are modified to reflect the real structure of the gas sector in terms of production, use, and trade, with the main research question being translated into experiments that simulate changes in the Egyptian gas sector. Section 4 shows and discusses the empirical results, which cover impacts of the simulations on trade, prices, production and GDP. The section closes by highlighting major welfare implications for the Egyptian people. The last section concludes and highlights policy implications.

2. The Egyptian gas sector

Fig. 1 shows the development of production, consumption and exports of gas in Egypt between 2004 and 2014. Due to strongly increasing production, Egypt evolved into a significant net exporter of gas after 2004 and was among the top 15 gas exporters in the world by 2010 (BP, 2011).

The importance of the natural gas sector in the Egyptian economy has been growing in the last decade. As shown in Table 1, on average, the natural gas sector contributed about 8% to total GDP at factor cost and nearly 56% to the value added of the mining sector during the period 2007–2010. Moreover, the sector's contribution to GDP increased to almost 10% in 2011–2012. BMI³ (2010) forecasts suggested that total gas production would reach about 92 bcm by 2014 with 40 bcm for exports and 52 bcm for domestic consumption. These projections, however, were

³ Business Monitor International.

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