Egypt’s economy is not typically described as being driven, or even heavily influenced, by hydrocarbons. This is due in part to the hydrocarbon-rich company Egypt keeps in the MENA (Middle East and North Africa), a region in which fully three-quarters of merchandise exports in 2007 were comprised of oil or gas. That is five times the average for lower-middle income countries globally, and seven and a half times the global average of 10%. In that year, Egypt’s exports of oil and gas comprised 52% of the country’s total merchandise exports, thus placing it much closer to the MENA average than to that for lower middle income countries as a whole. Moreover, Egypt’s export dependence on oil and gas has increased more rapidly than has the MENA’s or that for lower and middle income countries globally. Between 1995 and 2007 the share of oil and gas in Egypt’s total merchandise trade rose from 37% to 52%, whereas that for the MENA rose by only 3 percentage points and that for lower and middle income countries just four. For the two decades ending in 2006, hydrocarbon exports have contributed between one-fifth and one-quarter of total government revenue, either through tax payments or direct non-tax transfers. Egypt, in sum, is by world standards heavily and increasingly dependent upon hydrocarbons as the dominant source of export earnings and government revenues.

The Egyptian economy’s direct reliance on oil and gas constitutes, moreover, only part of its hydrocarbon dependence. Indirect economic impacts through its various relationships with other MENA hydrocarbon exporters, especially those in the Gulf, provide the second of the twin pillars of the economy. Travel and transport in 2007 constituted almost 83% of trade in services, which in turn made up more than one-quarter of GDP. Virtually the entirety of travel income was derived from tourism, to which visitors from the Gulf contributed approximately one-half. Suez Canal earnings, based primarily on shipment of oil from and goods into the Gulf, makes up the vast bulk of transport income. The $7.7bn of workers’ remittances contributed almost 6% of GDP in 2007 and again, those earnings are predominantly generated from the Gulf. Direct and indirect contributions of hydrocarbons to Egypt’s GDP thus dwarf all other sources. One-sixth, or some 17% of GDP is derived from oil and gas exports; another 15 to 20% from hydrocarbon related services; and say 5% from Gulf sourced remittances, taking the total to around 40% of GDP. In addition, foreign direct investment (FDI) in Egypt rose in tandem with the Third Great Oil Boom of 2003–8, ballooning in that period from $200m. to $11.2bn, with the Gulf’s contribution generally estimated to be about one-half. Taken together,
these direct and indirect hydrocarbon earnings render the Egyptian economy’s dependence on oil and gas something like one-half to two-thirds of that of the major MENA oil exporters, where oil and gas account for some 90% of export earnings and 80% of government revenues. But Egypt’s hydrocarbon dependence, as a result of both production and price increases, is much above the level of most lower-middle income countries.

Just as the general importance of hydrocarbons, including the impacts of those exported by other MENA producers, has been given insufficient attention in analyses of the Egyptian economy, so has the rising importance of the production and export of natural gas. Gas production expanded from 14bn cubic meters (bcm) in 1998 to 55bcm in 2007. It is anticipated that it will reach 80bcm in 2011. Egypt contributed 8.8% of the MENA’s gas production in 2006, a ratio expected to rise to almost 10% in 2011. By 2008 its share of world’s gas production was 1.9%. Its domestic consumption increased 10.8% annually after 2000, the fastest growth rate in the MENA region. A year earlier, when LNG export complexes on the country’s Mediterranean coast had become fully operational, Egypt had become the world’s sixth-largest exporter of that commodity, placing it above such petro-states as Oman and the United Arab Emirates and at almost two-thirds the level of exports of gas-rich Algeria. Three years before that, in July 2003, Egypt’s pipeline to the Levant, at that time terminating in Jordan, had become operational, thereby making Egypt a major supplier to rapidly growing MENA markets. Egypt, in other words, is a player in the world’s big league of gas producers and exporters.

The rapid expansion of the gas industry was fortuitous, for it substituted for the decline in oil output that was occurring as energy consumption escalated. From a high of 922,000 barrels per day production in 1996, oil production has slid to some 700,000 barrels per day and is anticipated to fall to some 600,000 barrels per day by 2011 and remain at that level through 2018, despite a recent small increase from 3.7 to 4.1bn barrels of proven reserves. According to a leading source on hydrocarbons, Egypt’s prospects for oil production growth are the least favorable in the MENA region. Domestic energy demand has been increasing at some 8% per annum since 1998. Consumption of oil products increased by almost 600% between 1971 and 2006, resulting in domestic demand for oil outstripping supply, with a tripling (from 5 to 15%) from 2001 to 2007 in the share of oil imports of the total of merchandise imports. Egypt’s total energy production, however, thanks to the rapid increase in the gas sector, remained more or less flat at some 60 kt of oil equivalent from 1992/93 through 2001, when it commenced a rise to almost 80 kilotons by 2006.

Given these dramatic increases in gas production and export, combined with Egypt’s increasing integration not only into the MENA energy economy, but also into the region’s distribution and export systems, it should come as no surprise that “Egypt is repositioning itself to be one of the biggest energy hubs in the world.” The physical bases that would constitute that hub are the Suez Canal, whose already important role in oil transport will be augmented by its growing importance in LNG shipments; the Sumed (Suez-Mediterranean) pipeline; pipelines linking Egypt to Israel and Jordan and through the latter, Syria, Lebanon and possibly on to Europe; integration of Egypt’s electrical grid, which is already connected to Syria and Jordan, with those of the Gulf and North and even East Africa; and finally, gas shipments to Europe, North America and ultimately maybe other markets from Egypt’s existing LNG trains in Damietta, Idku and Port Said, and possibly a fourth at some later date. Dreams of becoming an “energy superpower” have been encouraged by statements of the former Minister of Petroleum and Mineral Resources, Samih Fahmi. He estimated in 2007 that Egypt’s oil and gas sector would attract $20bn in foreign investment by 2012 and that the country’s proven and probable reserves of gas are 70 trillion cubic feet (tcf), with another 100–120 tcf of unproven reserves.
Fahmi was a strong proponent of expansion of the gas industry downstream into petrochemicals. His response in early 2010 to a parliamentary committee that expressed concerns about gas supply shortages was to say that his ministry is studying importing gas from “neighboring countries.” Egypt, in sum, appears to have great hopes that energy, both that produced in the country and that transported to and through it, will serve as the principal engine of growth for its economy. Whether this is a realistic and appropriate ambition is a matter that will be taken up after first assessing the present impacts of the energy sector, and especially gas, on the country’s economy and politics.

**Economic Impacts**

Hydrocarbons have been both an economic blessing and curse for Egypt. The oil and gas industries attracted $9.5bn of FDI between 2000 and 2005, a figure that was predicted to more than double in the following five years, although that rosy forecast is unlikely to be realized. The rapid development of the gas industry made possible by that investment underpinned the growth of overall energy production from some 10 kilotons (kt of oil equivalent) to almost 80kt by 2006. This growth in turn made possible extensive downstream development. A national gas grid is nearing completion, contributing substantially to one of the world’s higher rates of growth of energy use, which rose from less than 10kt of oil equivalent in 1971 to over 60kt in 2006 and on a per capita basis from 200 kilograms of oil equivalent to 800 over the same period. Both the aggregate and per capita growth rates are well above those in OECD countries and about at the level of China. Since 2000 Egypt has had the fastest rate of growth of demand for gas in the MENA at almost 11% per annum, although consumption per head remains low by MENA standards, being about one-fifth of that in Saudi Arabia and one-half of that in Iran. Rapid growth of energy consumption has been associated with a steady, steep rise in electricity generation as new gas-fired plants have been brought on-stream. Three-quarters of the country’s electricity needs are now met by gas-fired stations, compared to about one-quarter in the USA. The combination of a countrywide gas distribution network and expansion of electricity generation underpins the anticipated doubling of domestic gas consumption from 26.2 to 53.3m. cubic meters between 2004 and 2013. Availability of energy, in sum, has increasingly been shaping the Egyptian economy, including strategic investment choices.

Downstream there are numerous signs of expanding value added production. In 2007 the government announced its master plan for the petrochemical industry, which called for 20 major facilities by 2022. The first phase of multi-tiered vertical integration of that industry was scheduled to be completed in 2010, with the construction of a polystyrene plant that will receive styrene feedstocks from the Sidi Khreir Company’s plant on the Mediterranean coast. By 2004 chemicals and “other manufactures,” the great majority of which were of an energy intensive nature, accounted for more than 60% of total manufactures, as the share of food and beverages, clothing and textiles, and machinery and transport equipment continued to fall, as they have done since that time. Iron and steel exports, heavily dependent upon inexpensive energy, quadrupled from 2003 to 2007. Since 2000 petrochemicals and fertilizer have been the two fastest growing components of the manufacturing sector. Cement exports grew by 237% in the first five years of the 21st century. In sum, Egyptian industry is increasingly reliant on downstream hydrocarbon processing and on manufactures, such as iron and steel, fertilizer, cement and ceramics, for which energy is a or the major input cost.

The prospects of success for gas-fired development depend on the upstream and downstream components of the gas industry, its impacts on macroeconomic policy, and its relationships with other sectors of the national economy. The most vital issues in the assessment of the gas industry...
itself are the quantity of the resource that can be recovered and the international price for it. On both these measures there are causes for concern about possible Egyptian over-reliance on gas to drive its development. Proven reserves were estimated in 2008 to be almost 73 trillion cubic feet (tcf), with the government claiming an additional 100–120 tcf of “unproven reserves.” This claim, in addition to the government’s official reckoning that another 30tcf of proven and probable reserves will be added by the end of 2011, raises eyebrows in the gas industry. In addition to doubts about the claimed magnitude of reserves, oil professionals point out that more than three-quarters of Egypt’s gas is located under the Mediterranean, much at considerable depth, thereby incurring high extraction costs. Some analysts, including those in major international companies, believe that Egypt will not be able to meet rising domestic demand and service existing export contracts.

Increasing concern about the magnitude of gas reserves, their utilization, and the rubbery nature of relevant government data is manifested by independent Egyptian analysts. Among the apparent contradictions frequently noted is that between the stated government policy of allocating a third for local consumption, a third for export and a third for “future generations,” on the one hand, and the fact that some 60% of gas produced is consumed domestically for electricity generation. Much of that gas has to be purchased from the international companies whose exploration and development of Egypt’s gas on the basis of production sharing agreements has entitled them to about one-half of total production and a similar claim on reserves, thereby reducing reserves “owned” by Egypt to not more than 35–40tcf. Since Egypt purchases its extra requirements directly from the producing foreign companies, these amounts do not show up as imports on national accounts. Egypt’s actual energy balance is thus considerably less favorable than those accounts suggest. As for the government’s contention that one-third of reserves is being allocated to future generations, independent Egyptian commentators see no evidence of this. In sum, Egypt has gambled on its gas reserves being sufficient to sustain its domestic development of both petrochemical and energy intensive industries; to service rapidly rising domestic consumer energy demand; to pay-off its foreign exploration and development partner companies; and to export gas on its own account. This last need is particularly vital for balance of payment support and provision of government revenues in the face of persisting budgetary deficits, which have driven public debt to more than 70% of GDP. It is safe to say that very few independent analysts believe there are sufficient gas reserves to meet these competing demands. Shortages are already manifest, thus requiring a governmental juggling act which may account for the general lack of transparency that surrounds information on the production and utilization of gas and oil.

The supply challenge is paralleled by price-related issues, including national price setting and potential long-term price stagnation as global gas production soars, delinking its price from that of oil. The Egyptian government, faced with a variety of competing interests, has encountered difficulty in balancing them when setting gas prices. Its desire to attract foreign financial and operational partners into upstream development requires prices at international levels, whereas its needs for domestic consumption, exacerbated by subsidies, push its price interests in the opposite direction. As the supply squeeze has intensified and as the cumbersome price setting mechanism has not responded sufficiently rapidly to fluctuating international price levels, Egypt has alienated in various degrees international companies on which its upstream development depends. Some have responded by delaying investments and operations. Alleged inefficiencies of the upstream sector and the comparatively limited number of companies involved in it are commonly attributed to price policy problems. Of great political sensitivity has been the price for gas delivered to Israel since the opening of the pipeline in 2008, with critics arguing that it has been too low. The Ministry of Petroleum was dragged into court over the issue.
Hanging over these competing demands is the long-term price for gas, which since 2008 has been on a downward trajectory relative to oil and even other commodities.\textsuperscript{37} If this trend continues, it would relieve some budgetary pressure as a result of subsidization of domestic gas consumption, but would also reduce government export revenues while undermining the competitiveness of gas dependent exports, such as petrochemicals, fertilizer, cement, and iron and steel. If in the wake of the global recession gas prices fail to appreciate in tandem with prices for other goods and services, Egypt’s gas-fired development strategy will encounter major challenges.

Negative macroeconomic consequences and deleterious cross-sectoral impacts of gas-fired development include manifestations of the Dutch Disease, distortions caused by subsidies, and inadequate employment generation. Of these problems, the Dutch Disease is the most problematical. Its presence is attested to by the correlation between the value of the currency, on the one hand, and hydrocarbon production and exports, on the other. Pressure on the fixed rate Egyptian Pound in the late 1990s ultimately led to a devaluation of almost 50\% and a partial float in 2001–2. The black market rate for the pound had reached almost eight to the dollar. Interestingly, 2001 was precisely the year in which total energy production, which had been more or less stable since 1991 as oil production deteriorated and gas production began to accelerate, started to rapidly escalate, going from 50,000 kilotons of oil equivalent (ktoe) to almost 80,000ktoe by 2006.\textsuperscript{38} The currency, after sagging in the wake of the partial float, began to appreciate virtually in lock step with the expansion of the hydrocarbon sector from 2003. From around 6 to the dollar in 2004 and 2005, it then began to steadily outperform the dollar, rising to some 5.4 to the dollar by early 2010, by which time the dollar had already regained much of its lost ground against the Euro and other currencies. In sum, Egypt’s currency was one of the world’s better performers in the first decade of the 21st century, causing an IMF official to observe that “real appreciation pressures … may be costly in terms of growth.”\textsuperscript{39}

The resulting price inflation of Egypt’s own tradable goods contributed to the deterioration of the quantity and quality of its manufactured exports during this period. As a percentage of exports they fell from an average of 38.5\% between 1997 and 2001, to 18.6\% in 2007, which is just slightly more than one-half of the 20-year average 1987–2006.\textsuperscript{40} Manufactured goods’ contribution to exports, in short, was almost halved in the last two decades. Egypt’s merchandise trade as a percentage of GDP fell from 36.8\% in 1990 to 33.2\% in 2007.\textsuperscript{41} As for tradable goods in general, between 1995 and 2007 food fell from 8 to 6\% of exports, agricultural raw materials from 6 to 2\%, ores and metals from 6 to 3\%, and manufactures from 40 to 19\%. The only category of exports that increased its share was fuels, which rose from 37 to 52\%.\textsuperscript{42} By comparison, lower-middle income countries in that same period on average increased the share of manufactures in their exports from 66 to 68\%.\textsuperscript{43}

Manufacturing for domestic consumption has probably also been affected by the Dutch Disease. Although manufacturing value added per capita rose from $265 to $281 between 2000 and 2006, that was the slowest rate of increase across a range of comparator countries used by UNIDO, including Turkey, Indonesia, India, Peru, the Philippines and Latvia.\textsuperscript{44} Manufacturing’s share of GDP fell by 1\%, from 17 to 16\%, from 1995 to 2007.\textsuperscript{45} As for the composition of manufactured goods, the percentage of manufactured exports comprised by high-technology products, as reported by the World Bank, which had reached a historic high of 0.8\% in 2002, low even by MENA standards, began a decline in that year that reduced it to 0.2\% in 2007.\textsuperscript{46} According to UNCTAD, which uses a different definition of high technology goods, exports of them rose from 0.3\% of total exports in 1985 to 1.3\% in 2005, the lowest overall percentage and the smallest rate of increase among all comparator countries, including Turkey, Morocco, Jordan and Tunisia, which by 2005 achieved an average rate of high-tech manufactures
comprising some 14% of their total exports.\textsuperscript{47} According to an IMF report, “Egypt’s revealed comparative advantage remains ‘stuck’ with resource-based (textile and clothing, agro processing, and petro-based) rather than skill-intensive or innovation-intensive products.”\textsuperscript{48}

Yet other symptoms of Dutch Disease have been the prevailing, overall inflation rate and the rapid rise of asset values, especially real estate. The consumer price index, which revealed an inflation rate of around 2% from the late 1990s until the onset of the “gas boom” in 2003, escalated first to 4.5% and finally to over 18% in 2008. By comparison, hydrocarbon-poor Tunisia’s inflation rate averaged over that whole period around 3% and never exceeded 5%.\textsuperscript{49} Prices for real estate, both urban and rural, rose yet more rapidly than the consumer price index.

In sum, gas-fired growth has brought on at least a moderate case of Dutch Disease, with its usual negative consequences for the production and export of tradable goods, and for inflation. Egypt’s decreasing economic competitiveness as reflected by its ranking on the World Economic Forum’s Global Competitiveness Index, which fell from 50 in 2005/06 to 70 in 2009/10, also results in part from side effects of the Dutch Disease.\textsuperscript{50} The overall measure of the country’s economic health, which is the rate of growth of GDP per capita, certainly suggests the presence of a malady. Real per capita GDP grew at an annual rate of only 1.7% between 2001 and 2005, compared to a developing country average of 5.1%. In the MENA during the period, Turkey’s real per capita GDP grew by 2.9% annually, Morocco’s by 3%, Tunisia’s by 3.3% and Jordan’s by 3.5%.\textsuperscript{51}

Energy subsidies, which result in energy prices being “among the lowest in the world,”\textsuperscript{52} in addition to having negative budgetary consequences and causing inefficient energy use, have distorted patterns of productive investments. The magnitude of price distortion for energy resulting from government subsidies is suggested by the per liter price for gasoline and diesel fuel, the former of which remained constant at $0.30 from 1991 to 2006 before rising to $0.50 in 2007/08. The latter followed the same trajectory over that period, rising finally in 2007/08 to $0.20 per liter compared to the $0.10 it had been for the previous 16 years.\textsuperscript{53} In 2005/06 energy subsidies already totaled $7bn, but they continued their upward climb from that lofty height, reaching $11.6bn in 2007/08, or a staggering 7.2% of GDP.\textsuperscript{54} The government’s announcement of reductions in energy subsidies in the spring of 2008 was met with howls of protest, with the voices of energy intensive manufacturers apparently being the most effective. Within weeks the declared price increases were rescinded. Subsidies and transfers, which had consumed 6% of the central government’s budget in 1995, accounted for 39% of expenditures by 2007, as compared to 32% for the subsidy-rich MENA as a whole.\textsuperscript{55} Of this 39%, almost three-quarters is attributed to energy subsidies, excluding electricity, which is also heavily subsidized.\textsuperscript{56} The inexorable and steeply rising upward trend of subsidies and transfers is revealed yet more starkly if counted in Egyptian Pounds, as they rose from some 3.25bn in 1991, to 24.5bn in 2002, to 39bn in 2005 before blowing out to a huge 86bn in the following two years.\textsuperscript{57} As just stated, the overwhelming share of these subsidies and transfers is comprised of energy subsidies, which alone consume almost one-quarter of government expenditures. Not surprising then is the fact that fuel subsidies as a percentage of GDP are higher than in all World Bank comparator countries, which include, among others, Jordan, Yemen, Indonesia, and Nigeria.\textsuperscript{58}

Since energy is so cheap, its use in production is comparatively inefficient. By the standard measure of oil intensity in production, which is defined as the number of barrels of oil required to produce $1,000 of GDP, Egypt is about one-third as efficient as Indonesia and about one-half as efficient as Brazil, Nigeria, India, China or South Korea.\textsuperscript{59} Moreover, Egypt’s energy efficiency is in decline. Based on the World Bank’s measure of GDP produced in constant 2005

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dollars of purchasing power parity for every kilogram of oil equivalent used, GDP output fell from almost $7 in 1980 to some $5.50 in 2006. As a consequence of energy subsidies, rising energy prices, inefficient energy utilization and capacity limits on Egyptian energy production, especially of oil, Egypt has to import steadily more fuel. Its fuel imports as a percentage of merchandise imports rose from around 2% in the mid 1990s to an average of 15% in 2006 and 2007. It is thus paradoxical, although not unique among energy exporters, including Iran, that Egypt’s gas-fired development is associated with it having to allocate an ever greater share of its import budget to energy.

Also related to the strategy of gas-fired development is Egypt’s chronic unemployment problem, which abated somewhat during the Third Great Oil Boom (2003–8), dropping officially to some 10%, a figure probably 50% below the actual rate. Precise figures of those employed in the gas industry are unavailable. Since it is a newer and yet more capital intensive industry than oil, and one in which international companies play a still greater role, the number of those employed in the gas industry is probably less than that in its oil equivalent. In 2004 the upstream oil industry employed 33,000 Egyptians, the downstream an additional 30,000. At that time Egypt’s labor force was some 19m. strong, suggesting that the oil and gas industries combined, employing probably a few more than 100,000, did not account for more than half of one percent of the labor force. Of course employment growth has occurred further downstream, especially in energy intensive industries, such as in cement, iron and steel, fertilizer and ceramics, but even those industries are considerably less labor intensive than more sophisticated manufacturing, such as electronics, and are far less labor intensive than the garment and textile industry, which virtually throughout the Mubarak era has been estimated to employ some 1m. workers. But that industry’s share of value added in manufacturing is low and declining, having fallen from 16% in 1998 to 10% in 2002, sliding slowly further downward since then. Its failure to grow is due in considerable measure to the fact that it remains the most tariff protected industry in Egypt, so remains remarkably inward looking, hence non-competitive in European and North American markets, even when compared to MENA countries such as Morocco, Tunisia and Jordan, to say nothing of league leading China. But tariff protection and general lack of focus on the traditional garment and textile industry, including inadequate capital investment, is due in some measure to the relative attraction of alternatives made possible by the gas-fired development model. Moreover, the Dutch Disease has contributed substantially to price non-competitiveness of Egyptian garments and textiles, even in the protected domestic market.

The oil and gas industries, in sum, are not significant employers in their own right, but do generate employment in energy intensive industries. Against those gains, however, actual losses and opportunity costs for employment in other industries, especially garments and textiles, have to be offset. Labor force statistics reveal that the leading growth sectors are construction, tourism and services more generally, with some two-thirds of new jobs being created in the informal sector. This, in turn, suggests that the gas-fired development model is not propelling the economy so that it is generating large numbers of increasingly productive, remunerative jobs, as is suggested by both low labor productivity and total factor productivity. In the MENA region only Yemen and Syria have lower labor productivity than Egypt, whose score on that measure is less than 30% of Brazil’s and only some three-quarters of the MENA labor productivity average. Egypt’s total factor productivity (TFP)—the measure of its capacity to manage the factors of production—closely parallels the low rate of growth and absolute level of labor productivity. Its TFP is less than 40% of Brazil’s and is only some four-fifths of the MENA average. And again, the only MENA countries that perform less well on this measure are Yemen and Syria. GDP growth in the boom years 2003–8, which peaked at almost 8% in 2007, resulted
from increased capital and labor inputs, not from improved productivity. Such factor-driven growth is particularly precarious, dependent as it is on investment capital, which in turn must be provided primarily by external sources given the low rates of domestic savings resulting in part from low labor productivity and low TFP. Continuation of the Great Recession that commenced in 2008, which has substantially reduced both FDI and portfolio investment into Egypt, thus poses a major challenge to employment and growth.

One of the arguments put forward in support of capital intensive, energy led development, is that its overall management enhances general governmental capabilities, while the hydrocarbon industries themselves create models of management and capital use efficiency that can be generalized to other sectors. One of the cases cited in support of this contention is that of the Saudi government and Saudi Aramco, the former of which has recently been compared to “developmental” states of East Asia, and the latter of which is not only one of the world’s most efficient national oil companies, but one whose management and organization has had spillover effects on the Saudi economy. In Egypt, however, there is little evidence of such beneficial impacts. If anything, the record suggests flawed governmental management of the sector and a comparatively poor record of development of capacities of public and private sector firms within it.

Overall management of the hydrocarbon sector suffers from lack of transparency, which in turn undermines governmental credibility both domestically and internationally. Claims for gas reserves that appear to be unduly optimistic, such as that by then petroleum minister Fahmy for 100–120 tcf of “unproven reserves,” are greeted with skepticism. One authoritative source notes that “there are concerns about what the numbers actually represent,” and that “inflated reserve figures do nothing to solve the problem of the imbalance between gas supply and demand in the country.” Even production figures are ambiguous. Ramadan Abul Ela, professor of petroleum engineering at Alexandria University and a former member of the lower house of parliament, finds that “the volume of Egypt’s production of natural gas is a mystery. No one knows for sure the volume of that production.”

Officially proclaimed ambitions of the 20-year, three-phase petrochemical master-plan that by 2022 is to attract $10bn in investment and result in 24 petrochemical plants in 14 industrial complexes, are greeted with considerable doubt. “The case for Egypt as a significant petrochemicals player has yet to be made convincingly,” according to international authorities on the subject.71

Skepticism about both gas reserves and the pace of development of downstream industries has intermittently been reinforced by events that have proved embarrassing to the government. Postponement of a planned additional LNG train by potential investors due to concerns about supply, triggered in part by chronic undersupply to one of the existing trains, was one such event. So, too, was the admission in January 2010 by then minister Fahmy that no more export contracts could be concluded before 2011 because there was insufficient gas to cover needs in the domestic market. Shortly thereafter he revealed that the Energy Committee of the ruling National Democratic Party had suggested that he investigate importing gas from neighboring countries. The entire downstream development plan was placed in limbo in 2008 as a result of a decision to cease construction of the $1.4bn petrochemical plant at Ras al Barr, which was then more than 40% complete with more than $500m. having been invested.

Lack of predictability, flexibility and transparency with regard to pricing has also marred the government’s reputation for management of the gas sector with both international and domestic audiences. Unwillingness to raise prices for the government’s share of gas produced on the basis of production sharing agreements as international prices skyrocketed after 2003 caused several international oil companies to delay initial or additional investments. A new 20% tax on companies in free zones caused a proposed Kuwaiti-Egyptian joint venture $2.2bn petrochemical plant
Much more controversial was the 2006 decision to export gas to Israel for 15 years via an Egyptian-Israeli public/private consortium at an apparent price of $2.75 per million British thermal units. Within months of gas exports commencing an Egyptian court ruled in 2008 that exports be stopped pending clarification of pricing issues, a decision which the government of Egypt ignored.79 The issue became a cause célèbre in Egypt not only because gas exports were continued during Israel’s “Operation Cast Lead” in Gaza in December-January 2009, but because in the following winter the country was stricken with a shortage of butane cylinders upon which consumers without piped gas rely. Investigations by various sources, including Amr Hamouda of the Fustat Studies Center, revealed that Egypt was paying more for imports to produce the butane than it was receiving from Israel for the gas it was exporting.80 Ibrahim Zahran, former chairman of Khalda Petroleum Company, asked rhetorically, “What is the exact price for selling gas to Israel? How much profit does Egypt make out of it? Unless the petroleum sector is transparent about these issues we will continue to believe that their talk is for media consumption.”81 Following the “January 25 revolution” of 2011, the gas pipeline through the Sinai linking Egypt and Israel was blown up four times.

If management of the capital intensive hydrocarbon sector were to have favorably impacted governance capacities generally, it might be reflected in relevant measures of that concept. There is limited evidence that this could be the case. Despite a steady decline along the World Bank’s dimension of Voice and Accountability from 1998 to 2008, Egypt did improve its ranking on government effectiveness and regulatory quality and by 2008 was slightly outperforming the average for lower middle income countries.82 On the other hand, there was no change in the rule of law dimension over that period, while the control of corruption declined from a percentile ranking of almost 50 to one below 30.83 On this corruption measure Egypt by 2008 was substantially below the average for lower middle income countries. As for the broader measure of ease of doing business, Egypt demonstrated some improvement in the twenty-first century, but by 2008 its score was still less than half the MENA average and well below that for even Iran and Syria.84 On the critical measure of ease of enforcing contracts, Egypt in 2009 ranked 148th, with only Syria in the MENA ranking lower.85

Governance in Egypt, in sum, as measured by the relatively narrow effectiveness and regulatory dimensions, has improved, a result which might be partially attributable to coping with the complexities and international requirements of the hydrocarbon industry. But so, too, the perceived increase in corruption and declining accountability of government are also frequently associated with hydrocarbon rents. And the government has clearly not succeeded in transforming the business environment, so on balance the case for improved governance resulting at least in part from managing the hydrocarbon sector does not seem to hold. Possibly reflecting the failure to improve the business environment is Egypt’s relatively low ranking on private investment as a share of GDP. The MENA in 2005–7 was the world’s lowest ranking region on this measure and Egypt within that region was only underperformed by Iran.86

As for the efficiency of public and private Egyptian companies in the hydrocarbon sector, the evidence does not support an argument of substantial improvement nor of competitive advantage. The key state-owned entity managing the upstream end of the gas industry, Egypt Natural Gas (EGAS), is criticized within the industry for “the length of time it takes to award contracts.”87 There are indications that political involvement in this and other key public companies are a prime cause of inefficiency. As noted by one well informed international hydrocarbon industry expert, “When it comes to agreements, everyone in Egypt, up to Mubarak is involved.”88 As for the internal workings of both public and mixed sector companies in the industry, one insider laments that while all managing positions are occupied by Egyptians, they have “expat mirror images,” but “unlike Oman, where they are trying to go for a
knowledge transfer, here they are just creating jobs without the transfer." A survey of experts in international oil companies of the level of national technological development in the hydrocarbon sector rated Egypt a low two on a five point scale.

Underlying the apparent failure to upgrade capacities of public and mixed sector oil and gas companies is the fact that they are used extensively for patronage purposes. The case of former Minister of Housing and New Communities, Muhammad Ibrahim Suliman, is illustrative. While engaged in a long running legal battle against charges of having allocated prime real estate to family members and friends during his twelve years as minister, he was appointed in June 2009 chairman of the state-owned Maritime Petroleum Services Company by Minister of Petroleum Fahmy. Some months later opposition members of parliament began a campaign against Suliman on the grounds that as a serving MP he was prohibited from holding a public sector post. In January the Maglis al Dawla (State Council) ruled against Suliman, who immediately resigned his parliamentary seat of Gammaliya, paradoxically one of the poorest districts in Cairo. He was ordered to pay back all monies received from the company since his July appointment. The Ministry of Petroleum subsequently announced that it had received LE348,600 from him, thus suggesting a monthly salary of some LE50,000, or about $9,500. Opposition MP Gamal Zahran, a professor of economics at Suez University, responded by claiming he had evidence that Suliman had in fact been paid LE9m. by the company during the less than eight months he was in its employ, or some $1.7m. Suliman was reported by the authorities to be under investigation for corruption and banned from leaving Egypt in February 2011.

Possibly not coincidentally, then minister Fahmy, presumably sensitive about allegations of corruption in his domain, announced during the parliamentary struggle over Suliman that the ministry was considering floating some publicly-owned hydrocarbon companies on the Cairo stock exchange. Two years previously a similar announcement had led to speculation that one of the leading candidates was Tharwa Petroleum Company, whose ownership reveals the various tentacles of the state extending into operational areas. Its joint owners are the 100% government-owned Egyptian General Petroleum Corporation, the Egyptian Gas Company, and the Ganub al Wadi Petroleum Company, as well as the Ministry of Finance and the National Investment Bank. Tharwa in turn owns three companies involved in manufacturing and assembly of drilling rigs and other upstream operations, including several with the Chinese giant SINOPEC. In short, the hydrocarbon sector provided a vital source of patronage for the Mubarak government. Utilization of the sector to that end undermined its efficiency and deterred the government from privatizing major parts of it, just as it shied away from privatizing publicly-owned banks, also instrumental in the generation and allocation of patronage. The degree of private participation in the gas industry, which is “a mere 15% of the industry’s output,” suggests how reluctant the government was to give away the goose that laid such golden eggs.

**Political impacts**

The political impacts of gas fired development appear to be more negative than positive. On the latter side of the ledger, the engagement of Egypt in regional and global hydrocarbon networks and markets may have beneficial effects. If indeed Egypt does become a significant energy hub at the intersection of West Asia, Africa and Europe, it will further globalize the country’s political economy, thereby likely enhancing Egyptian governance both narrowly and broadly defined, while possibly also contributing to better inter-state relations across these three continents. As far as domestic politics is concerned, the post-2003 hydrocarbon boom initially bought considerable
legitimacy for the Nazif government installed in July 2004, thereby rendering its task of undertaking neo-liberal economic reforms easier. But those reforms exacerbated inequality and failed to stimulate sufficiently rapid economic growth to support political liberalization.

On the negative side of the political ledger the immediate impact of the hydrocarbon boom was to increase rents accruing to an economically and politically embattled authoritarian regime, thereby enabling it to reel in political liberalization. The strong, inverse correlation between Egypt’s hydrocarbon rents and its score on the World Bank Voice and Accountability measure are reflective of the broader relationship. Empowered by having a substantial new source of rents to buy off specific constituencies while expanding employment and consumption in general, the regime concluded it could again close the political safety valve which it had previously cautiously opened. So what specific form did those vital rents take and how were they politically invested?

International sales of gas rose to some $2bn during the great gas boom, accounting in 2007 for more than 23% of total government revenues, which is somewhat more both in total and in percentage of governmental revenues than Syria, a country sometimes described as being hydrocarbon dependent, derives from its oil exports. It may not be coincidence that at that time subsidies also constituted just more than 23% of total budget expenditures, of which energy subsidies comprised 74%. The gas rent thus came to underpin the budget in general and its politically vital, broad subsidy component in particular. A closely related rent is generated from the state’s almost total control of upstream and the immediate downstream commercial operations in the gas industry. As mentioned above, less than 15% of those operations are privately owned. Control of this profitable sector not only generates additional government revenue, but also provides opportunities for the selective distribution of patronage to favored clienteles, as the case of Muhammad Ibrahim Suliman exemplified. Both of these rents are traditional in nature, in that they flow from the government’s direct control of the commodity and the industry extracting and marketing it. Gas rents of this nature are thus equivalent to rents generated by the oil industry during its boom period for some two decades after 1973.

But the gas industry has also generated a new, third source of rents, which were shared between the regime and the crony capitalists it tethered to itself by virtue of those rents. This source consists primarily of further downstream gas processing and energy intensive industries rendered competitive by access to subsidized inputs, including electricity, gas and gas derivatives. In these capital intensive undertakings the private sector dominates, with the captains of these industries, such as Ahmad ‘Izz (iron and steel), the Sawiris family (cement), and Muhammad Abu al ‘Inayn (ceramics), being the wealthiest men in Egypt at the twilight of the Mubarak era. A tight circle of investors at one remove from these titans extracted what might be thought of as secondary rents from these downstream industries by placing their ample funds in investment companies, such as Citadel Capital, that with governmental approval and even outright facilitations took equity positions in various of the companies. The gas industry thus created a new class of super cronies, who in turn rewarded the regime through direct payments to or on behalf of its leading members. Ahmad ‘Izz, for example, was a principal financier behind the Gamal Mubarak campaign for the presidency.

These rents are costs to the nation’s economy, in that they are generated as a result of subsidized inputs, which might otherwise be exported on the country’s account at prevailing, higher international prices. Recent research conducted under the auspices of the Egyptian Center for Economic Studies has documented the magnitude of these subsidies and their impacts on specific industries and enterprises. The domestic prices for natural gas, diesel fuel and gasoline were in 2008 approximately 55%, 36% and 37%, respectively, of the actual cost of...
production. As a percentage of world prices, diesel fuel and gasoline were 23% and 30%, respectively, while gas was supplied domestically at 23% of its international price.98 Electricity generation accounts for some 64% of natural gas consumed locally.99 If all domestic energy prices were raised to the cost of production, they would cause the consumer price index to jump by between 35% and 40%.100 Fuel subsidies as a percentage of GDP, at 4.6%, were by 2005 already higher in Egypt than in all comparator countries, including such oil producers as Nigeria (3.5%), Indonesia (3%) and Bolivia (2.2%).101 Three years later Egypt’s subsidy bill as a percentage of GDP had risen another 50%. Egypt is one of the few countries in the world in which the oil intensity of production has increased rather than fallen over the past decade.102

The largest single beneficiary of these energy subsidies is the manufacturing sector, which consumes 30% of petroleum products, 26% of natural gas and 38% of electricity, generation of which consumes about two-thirds of all domestically-utilized gas, thereby redoubling the subsidy passed on to electricity consumers. By comparison, transportation accounts for 42% of petroleum products, but virtually none of natural gas or electricity. Households consume slightly less electricity than does manufacturing.103 Within the manufacturing sector the fertilizer and cement industries account for 8.8% and 7.4% of all natural gas consumed domestically. Other industries, chief of which are iron and steel and aluminum, utilize 10.5% of all natural gas, 15.8% of diesel fuel and 45.0% of fuel oil.104

How vital are these subsidized inputs to the manufacturing sector? For fertilizer, steel and aluminum production, fuel and electricity constitute almost one-third of total production costs, whereas for cement they are some 28%.105 The importance of subsidized energy to the profitability of these industries is reflected in calculations of the impact on their profits were subsidies to be reduced or removed. The profit ratio per ton for domestic sales in the nitrogenous fertilizer industry, for example, would decrease from the existing 23% to 7.8% were energy prices to rise by 60%. They would become negative with a doubling of energy prices, which it should be noted would still leave energy prices well below prevailing international levels.106 But since the domestic price for nitrogenous fertilizer is about one-half of the international price, the figures are quite different for export sales. The profit ratio for those sales is currently over 40% and would fall to 21.5% were energy prices to be doubled.107 In the other energy intensive industries domestic and export price differentials are minimal. Prevailing profit ratios in the cement, aluminum and steel industries, for example, are 40%, 29% and 14% per ton, respectively.108

Were energy subsidies halved, profitability would drop to 29%, 26% and 12%, respectively.109 These profit ratios, even with a reduction in subsidies, are higher than prevailing ratios for Europe, North America and the Pacific, but similar to those in GCC countries. By way of comparison, in the United Kingdom 46 fertilizer companies have an average profit margin of 2%, compared to 21% in Egypt.110 Leading Egyptian cement companies have profit ratios in excess of 40%, presumably the key attraction to foreign interests that have invested heavily over the past several years in that industry. For example, Lafarge, the French cement giant, paid Orascom Construction Industries, a Sawiris family holding company, some 10bn euros in December 2007 for its stake in the Egyptian cement industry.

The remaining question is what are the patterns of ownership of these energy intensive industries? In a word, each is an oligopoly or, in the cases of iron and steel and aluminum, virtual monopolies. Two companies, for example, control more than three-quarters of production of nitrogenous fertilizers.112 Along with another firm, more than 92% of production is accounted for by these three firms. A total of 11 firms constitute the cement industry, but three account for some 70% of total production. The iron and steel industry is yet more concentrated, where two of the 20 producers account for two-thirds of output. Most concentrated of all is the
aluminum industry, in which Misr Aluminum Company accounts for virtually all production. The principal owners of these leading firms constitute the dominant segment of the business elite, with many of them also having played prominent political roles in Mubarak’s Egypt. The energy intensive industries they control are the largest beneficiaries in the country of subsidies for oil products, gas and electricity, which reached some $11bn in 2008/09. They also benefit substantially from hidden subsidies as Egypt has had to turn increasingly to international markets to purchase hydrocarbon products, transactions that in many instances do not appear on national accounts, hence are not counted as subsidies. Nor, for example, is the provision of domestically-produced oil to refineries virtually free of charge recorded as a subsidy.

A rough estimate would suggest then that annual rents from energy subsidies captured by the crony capitalists who controlled the commanding heights of the fertilizer, cement, iron and steel, ceramics and aluminum industries, reached $5bn. The side payments they presumably made to political elites thus compensate for the decline in patronage resulting from privatization of government owned economic assets. The upstream and immediate downstream energy sectors, however, remaining overwhelmingly under government control, directly contribute major shares to government revenues. Hydrocarbons, in sum, whether upstream or downstream, generate the predominant share of rents upon which the regime relied for patronage and upon which its private sector clients relied for their profits.

Assessment of the gas fired strategy

Egypt’s heavy and increasing reliance on hydrocarbons, especially gas, is detrimental to its prospects for both economic and political development. As for the former, the country is not using resources wisely, as attested to by its low and declining efficiency of energy use. Falling oil production and poor prospects for future discoveries present worrying possible parallels for the gas industry. Governmental management of the hydrocarbon sector has not resulted in islands of efficiency that might then be generalized throughout the public service and public sector. Nor have the hydrocarbon upstream or downstream sectors served as incubators for competitive, globalized private firms. Energy-intensive industrialization has depended on subsidies for its success, meaning that its profits derive from rents, thus entail substantial opportunity costs. Moreover, such industrialization is not sustainable in the face of ever increasing competition for Egypt’s limited gas and oil reserves.

Indeed, the hydrocarbon based development strategy as a whole is not sustainable, nor is it laying foundations for an alternative model. If anything it is undermining such potential foundations. Stagnating productivity of labor and management results in part from distortions resulting from the Dutch Disease, key to which is the undermining of competitiveness of non-energy intensive tradable goods. Egypt’s basket of exports is diversifying comparatively slowly and its comparative advantage, outside the subsidized energy intensive sectors, is increasingly restricted to low wage, low technology production processes. Maintenance of the bloated civil service and public sector, which militates against productivity growth, is also a side effect of hydrocarbon generated revenues. In the absence of productivity and export growth, jobs are increasingly dependent on factor inputs, chief of which is capital. As FDI and portfolio investment continue to decline from their peak in 2007, unemployment has escalated. Hydrocarbon based and related industries, even if successful, cannot absorb a substantial percentage of the more than three-quarters of a million youths hopeful of entering the labor market every year. The switch from oil to gas as the fuel to drive economic growth has thus not served Egypt well. It has perpetuated conditions that militate against making the economy more competitive. Because hydrocarbon dependent development in countries with limited reserves...
is not sustainable, Egypt is wasting both scarce resources and valuable time while pursuing this strategy.

The political consequences of gas fired growth have also been negative. Direct hydrocarbon rents have sustained authoritarianism. Rental income has been diversified and enhanced by the establishment of downstream energy-intensive industries, whose beneficiaries could not provide material bases for autonomous political organization without risking their share of rents. Thus, authoritarianism, once associated with state capitalism, was reinvented within what was nominally a privatizing economy, but which in reality was an economy whose commanding heights were controlled by regime cronies. Such an economy was one that exacerbated inequalities, as attested to by the persisting two-fifths of the population living on less than $2 per day, despite GDP growth that at its peak reached almost 8% annually. The anomaly is explained in part by the growing number of multimillionaires and even billionaires, although it is fair to say that expansion of the middle class also occurred. But that class has not grown as rapidly as in comparable countries and it in any case remained sandwiched between the poor, on the one hand, and the regime and its wealthy cronies, on the other. Gas has, in sum, perpetuated and intensified the hydrocarbon curse for Egypt’s political economy. One of the greatest challenges facing the new government will be to convert that curse into a blessing.

Notes
1 World Development Indicators, 2009 (hereafter, WDI), CD-Rom, World Bank.
2 Ibid.
4 Hydrocarbon dependence is essentially ignored, for example, in the otherwise useful assessment of the Egyptian economy by Paul Rivlin, Arab Economies in the Twenty-First Century, Cambridge: Cambridge University Press, 2009.
6 Ibid., p. 22.
12 WDI; and “Consumption of Oil Products, Egypt,” IEA http://www.iea.org/stats/index.html
13 WDI.
15 Ibid.
19 WDI 2009.
20 WDI 2009.
23 Ibid., p. 12.
24 Maree, p. 54.

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30 Nield, p. 67; Maree.
31 Nasr, “Under Pressure.”
33 Nasr.
36 Maree, pp. 55–56; Nield, pp. 63–64.
37 Blackburn.
40 WDI.
41 *Pocket World in Figures*, Economist Intelligence Unit, 2009, p. 74.
42 Ibid., p. 216; and WDI.
43 WDI.
45 WDI.
46 Ibid.
48 Enders, pp. 20–21.
49 WDI.
51 Enders, p. 3.
52 Enders, p. 27.
53 WDI.
55 WDI.
57 WDI.
58 Figures cited in Khattab, p. 9.
59 Ibid., p. 10.
60 WDI.
61 WDI.
63 Ibid., p. 20.
64 WDI.
67 Ibid., p. 65.

69 Cited in Maree, p. 56.

70 Nasr, “Under Pressure.”

71 See for example Nield, pp. 63–67; and “Reformers Dash for Gas.”

72 “Reformers Dash for Gas.”


75 Nasr, “Under Pressure.”

76 Maree, “Dispute Tarnishes Cairo’s Image,” *Middle East Economic Digest*, 52, 32 (August 8, 2008), pp. 18–19.


78 Ibid.


81 Nasr, “Gas Saga Drags On.”

82 WDI.

83 Ibid.

84 Compiled from Doing Business database, IMF, WTO, UNCTAD and World Development Indicators and cited in Henry and Springborg, p. 170.


87 “Reformers Dash for Gas.”


89 Ibid.

90 Ibid.


94 Compiled from IMF Article IV publications and World Development Indicators, 2009, and cited in Henry and Springborg, p. 177.

95 Khattab, p. 2.

96 Interview with Hisham El-Khazindar, Citadel Capital, 22 June 2008.

97 Khattab; and Abouleinein, El-Laithy and Kheir-El-Din.

98 Abouleinein, El-Laithy and Kheir-El-Din, p. 11.


100 Ibid., p. 18.

101 Ibid., p. 9.

102 Ibid., p. 10.

103 Ibid., p. 19.

104 Ibid., p. 20.

105 Ibid., p. 22.

106 Ibid., pp. 22–23.

107 Ibid., 24.

108 Ibid., 24.

109 Ibid., 24.
110 Ibid., p. 25.
111 Ibid., p. 25.
112 Ibid., p. 22.
113 Ibid., p. 27.
114 Aboulenein, El-Laithy and Kheir-El-Din, pp. 9–10.
115 Enders, p. 21; and From Privilege to Competition, pp. 60–65.