

Testimony
of
Lucian Pugliaresi
President
Energy Policy Research Foundation, Inc.

Before the

***Task Force on Competition Policy and Antitrust
of the
U.S. House of Representatives Committee on Judiciary***

Hearing on Retail Gasoline Prices

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Submitted by:

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Chairman Conyers, Ranking Member Chabot, and members of the Task Force on Competition Policy and Antitrust, thank you for the opportunity to testify on such an important topic. The rapid rise in gasoline prices has become a burden on U.S. consumers and the broader economy. Our organization has historically kept on top of the issue, and EPRINC has published a sequence of reports on gasoline supply and demand, resource nationalism, oil prices, role of ethanol fuels, and the structure of the world oil market.

As in institution, we bring historical perspective on developments in these markets. The Energy Policy Research Foundation, Inc. (EPRINC), formerly PIRINC, was incorporated in 1944 and is a not-for-profit organization that studies energy economics with special emphasis on petroleum and the downstream product markets. EPRINC researches and publishes reports on all aspects of the petroleum industry which are made available free of charge to interested organizations and individuals. It is known internationally for providing objective analysis of energy issues.¹

My testimony today includes an assessment of why petroleum prices have risen so dramatically over the last two years. Today, the cost of crude oil---combined with federal and state taxes---accounts for 93 percent of the price at the pump (crude at \$122/bbl plus approximately 50 cents of federal, state, and sales taxes yields a direct cost with no refiner or retailer margin of \$3.36/gallon). Although, I will make some brief comments on the refining

¹ Views expressed in publications, interviews and testimony result from the Foundation's own analysis and are not meant in any way to represent a consensus of its member's views. EPRINC's supporters recognize the importance of a credible, authoritative and impartial organization that can help industry and government officials, the media, and the general public better understand the petroleum industry and the markets in which it operates.

and distribution sectors, the fundamental cause of high gasoline prices is the high price of crude oil and this is the focus of my testimony

Why Are Crude Prices So High?

Over the last ten years, the world oil market has clearly experienced an unprecedented number of new and sustained impediments to upstream development, including, unilateral contract renegotiation, nationalization, lack of investment by national oil companies, restrictive access to resources, war and civil strife. Many of these factors, along with technical challenges in bringing new oil fields online have also contributed to reductions in excess production capacity among OPEC producers. At the same time, global oil demand has grown robustly. These developments are presented in more detail in the graph and chart, entitled “A Series of Unfortunate Events.”

When these “unfortunate events” occur, the world oil market not only loses existing production, but expectations on the availability of future supplies are also revised downward. These ongoing events, which have now resulted in a sustained trend, prompted us to dig through our files to see if we had done some earlier work on the topic. A tattered mimeographed document prepared many years ago by *EPRINC (PIRINC at that time)*, was circulated by the staff to our trustees and clearly shows that if you live long enough history does indeed repeat itself,

American petroleum investments abroad are exposed to unprecedented political, social and economic changes. There is the ever present “specter of communism.” Socialist and related nationalist movements all over the globe add their share to the ever growing difficulties. No longer can a foreign government investor depend on the protection by his government alone. No longer can a foreign government safeguard investments by guarantees, when political upheaval may remove it overnight. Policy making for petroleum companies today call for statesmanship of the highest order.

In the domestic field the petroleum industry is entirely on the defensive. Again and again it has been shocked if not surprised by government and foundation sponsored theoretical publications. The recent Federal Trade Commission Study, 900 pages of complaints against alleged international oil cartel activities, is an example of a trend that can only continue. Many similar studies, such as the Yale

published “A National Policy for the Oil Industry” (financed by Carnegie and Rockefeller foundations), or the Columbia University publications “Concentration of Economic Power” by David Lynch, and the cartel investigation of the 20th Century Fund are shaping the thinking and actions of legislators which in the end will only lead to lower oil production and higher prices.

***Staff Memorandum to Board of Trustees of PIRINC
New York City
February 13, 1952²***

Resource nationalism can be defined as the recent (or perhaps recurring) trend in the international oil industry wherein host nations change the terms of their contracts with international oil companies (IOCs) developing indigenous oil and gas resources. Encouraged by the rapid escalation of oil prices in recent years, this trend is now spreading rapidly. Rising oil prices have emboldened governments to take a greater share of the revenue of projects which were negotiated when oil prices were substantially lower. A variety of explanations for these actions are brought forward, including existing production contract terms do not adequately permit a fair distribution of the good fortune of rising prices. Even in Canada and the U.S., investors are not totally immune from attempts by their respective legislative bodies to change previously agreed contract terms.

Operating companies, with some notable exceptions, have had little choice but to accept these new terms to protect residual value in their projects as existing legal alternatives are either too cumbersome or present further risks to remaining operations in the host country.

The longer term consequences of these unilateral actions are much more than a redistribution of revenue. These actions are likely to result in further reductions in investment in the exploration and development of petroleum resources, an arena in which there is a growing consensus that the industry is already “effort constrained.” Projects which present relatively high technical thresholds, extraordinary project completion risks, and very long lead times to initial production, may now be unable to attract adequate capital to go forward. This trend in unilateral contract changes, combined with growing limitations on access to resource development, and in many cases unrealistic terms for new projects, is all adding to the so-called “Peak

² In 1952, gasoline sold for 27 cents/gallon, approximately \$2/gallon when adjusted by the CPI deflator.

Oil” problem, which is now more about constraints above the ground than below. In a kind of perfect storm of bad luck, the resurgence in resource nationalism has been supplemented by civil strife and armed conflicts in several important producing regions in the world.

The world oil market has been subject to considerably more turmoil than generated by the recent resurgence in resource nationalism –armed attacks in Nigeria and Sudan are good examples rebel activity and civil strife that have led (and continue to bring to the world oil market) reduced output, and more importantly expectations that new opportunities to expand production must be postponed.

Role of Expectations

Ultimately, prices in the world oil market are set by the fundamentals of supply and demand. However, crude oil prices at any given moment reflect a wide range of considerations that go well beyond immediate conditions in the market, but also include expectations on future events, including world demand, technological advances, availability of highly skilled workers, availability of future supplies, replacement cost of new supplies, technical and political risk, war and terrorism, among others. In many cases, the immediate loss in output from any number of unexpected events has much less effect on the world market, than the resulting shift in expectations on the availability of expanded output over the next 5-10 years.

It is our view that major price shifts in crude oil prices since the early 1970’s can be explained in part (perhaps largely) by major shifts in expectations on future output. For example, the important consequence of the 1973-74 Arab oil embargo was the structural shift in the ownership and control of the vast resources of the Gulf. The 1973-74 Arab oil embargo, by changing expectations on future production levels from the major Middle East oil producers, brought about a sustained increase in the value of oil. As Middle East reserves were nationalized and transferred to the control of the host countries, expectations on future production from the region were scaled back and prices responded accordingly.

The so-called second oil price shock in 1979 can be seen in a similar light as the Iranian revolution also sent a signal that the region was in for a period of instability and the prior view that future output from Iran and Iraq would expand substantially was no longer likely. The point here is that in both cases, prices were affected by changing expectations on future

production levels. The subsequent fall in oil prices in the mid-1980's can be linked to a fundamental shift in medium term expectations on demand (as consuming countries engaged in fuel substitution and conservation efforts), and Saudi Arabia was no longer willing to engage in highly restrictive output levels to protect the existing price structure.

From the 1980's until the 1999 oil price recovery, OPEC was unable to limit (or had collectively been unwilling to agree to a strategy of limiting) sufficient volumes of oil production to obtain price levels which were substantially above long run replacement costs. Part of the problem with OPEC is that it collectively does not (and cannot) arrive at a consensus on long-term production strategy because of the divergent long term interests of its membership.

Prices Take Off

Since mid-2004 the price of oil has risen dramatically as the world oil market has faced a perfect storm of bad luck. Resource nationalism has run rampant, harming near-term output, and shifting expectations on future production.

World oil prices initially rose from about \$10 to \$30/barrel. While this was substantially above the levels experienced in the 1990's, it reflected some combination of rising demand and increased difficulty in replacing reserves as producers moved to technically more challenging environments, having produced much of the "easy" oil. The supply outlook was generally positive with output rising to keep pace with growing global demand.

Expectations on rising investment oil and gas development in Nigeria, Russia, Sudan, Venezuela, the U.S. and many other places soon evolved into an environment where projects were postponed, access to resources were denied or postponed, or contract terms were changed. Within a few years, an era of positive expectations between 2000-2004 turned into an era of negative expectations, and the bad news keeps on coming. Superimposed on this supply situation, has been rising incomes in China, India, and other parts of the developing world. These economies are also a major factor in rapidly rising demand for middle distillates, particularly diesel fuel.

Chart I and Graph I shows the forces at play that brought about much of the shift in expectations on new production. Note that by early 2005 historic forecasts by EIA (and others) on production growth were unrealized,

and combined with falling OPEC excess capacity helped to drive crude oil prices upward.

CHART ONE

A SERIES OF UNFORTUNATE EVENTS OIL MARKET MOVES FROM POSITIVE TO NEGATIVE EXPECTATIONS

Era of Positive Expectations

Outlook in general (but not always) is positive (1998-2004)

Era of Negative Expectations

Outlook in general (but not always) is negative(after 2004)

Lost Production

Oil market production loses between the two eras, both from base level output and expected new output.

Country

Iraq

Produced 2.4 mmb/d 1999-2002. The U.S. invasion in 2003 offered promise of rapid investment in Iraqi oil sector as economic sanctions were removed.

Turmoil in Iraq drops output to 1.8 mmb/d, 2003-2006. Investment in field rehabilitation and new fields postponed.

Lost production between eras, 600,000 b/d, plus unrealized additional output from postponed investment and inability to do field rehabilitation work.

Nigeria

Production rose from 2.1 mmb/d to 2.4 mmb/d between 2000-2005, with expectations to achieve up to 4 mmb/d by 2010 commonly accepted prior to 2005.

Civil strife and attacks on oil infrastructure has hurt production and investment. Oil production declined in both 2006 and 2007 (2.11 mmb/d) after 2.4 mmb/d in 2005.

500,000 – 700,000 b/d due to shut in production, political instability and fighting, plus unrealized additional output from postponed investment.

Venezuela

In 2002 oil production surpassed 3 Mm b/d and was showing potential for growth after several years of relatively consistent production.

A strike at the end of 2002 at PDVSA sent production into a nosedive. As of 2007 the country had recovered to slightly less than 2/3's of 2002's peak production. Recent nationalization has hurt investment, furthering Venezuela's production difficulties and growth potential.

Approximately 800,000 b/d decline in output, not restored after 2002-2003 strike, plus loss of previously expected output expansion after nationalizations in 2007, due to likely fall off in investment.

CHART (page 2 of 4)

Era of Positive Expectations

Outlook in general (but not always) is positive; (1998-2004

Russian production skyrocketed between 1999 and 2005, from 6.31 Mm b/d to 9.51 mmb/d. Privatization of Russia's energy sector brought in western investment and more efficient production and management methods. Output was projected at 10 Mm b/d by 2006 & expected to grow to 12 mmb/d by 2010.

Russia

Era of Negative Expectations

Outlook in general (but not always) is negative; after 2004

Re-nationalization of Russian oil companies, most notably Yukos in 2004, scared off investment and slowed production growth. Russia has failed to reach 10 Mm b/d production as of January 2008 but has seen slight growth over the past few years. Russia's major fields in western Siberia remain in decline, eastern Siberia not yet producing oil.

Lost Production

Oil market production losses between the two eras, both from base level output and expected new output.

Near term loss of output from re-nationalization approximately 200,000 – 400,000 b/d. Longer term loss unknown, but could be substantial, and loss in annual output over next 10 years may be as much as 1 million b/d.

Sudan

A peace treaty signed in 2005 to end the country's civil war was expected to allow for development of previously inaccessible fields. The Sudanese government said in 2005 production would reach 600,000 b/d by 2006. Oil reserves were acknowledged to be in the billions, as opposed to the previously known 560 Mm barrels of proven reserves.

Fighting has continued and rebel groups have launched several recent attacks against oil infrastructure in Sudan, mostly run by Chinese companies. Production has yet to reach 600,000 b/d and has fallen about 200,000 – 250,000 b/d short of expectations over the past few years, but grew to 570,000 in 2007. New production has been slow come online as many new fields remain inaccessible due to fighting and many western countries have launched divestment initiatives.

200,000-250,000 b/d of additional output not realized, investment outlook remains limited and access to known reserves has declined.

Between 1991 and 1998 Argentina's crude oil production grew by approximately 80% to 917,000 b/d. After 2 years of slight decline, production picked up again in 2001.

During the two years following 2001 production remained constant. In 2004 Argentina nationalized the country's oil sector and created state oil company Ensara. Ensara has been poorly funded by the government.

State company, Ensara controls all oil projects, oil production has been declining since 2004 and dropped below 800,000 b/d in 2007.

Argentina

CHART (page 3 of 4)

Era of Positive Expectations

Outlook in general (but not always) is positive; (1998-2004

Kazakhstan After the fall of the Soviet Union Kazakhstan opened its borders to oil and gas exploration. A major discovery was made in the Caspian Sea of an estimated 13 billion barrels. Production from this field, Kashagan, was expected to begin in 2005 with a consortium of foreign oil companies and Kazakhstan's KazMunaiGaz.

U.S.

Opening ANWR to development, which has an estimated 10.4 billion barrels of crude reserves, was a major part of president Bush's energy policy when he took office in 2000.

Canada (Alberta)

Canada has the second largest crude oil reserves in the world, 179.2 billion barrels, behind only Saudi Arabia. It is estimated that about 95% of those reserves are located in Alberta's oil sands deposits.

Era of Negative Expectations

Outlook in general (but not always) is negative; after 2004

The government has implemented several restrictions against foreign oil companies over the past several years as it seeks to strengthen control of its energy resources. It is currently renegotiating the Kashagan deal it made several years ago with the consortium of foreign oil companies.

Legislation that would allow drilling in ANWR (Arctic National Wildlife Refuge) has failed to be passed by Congress. Attempts at new offshore exploration have seen similar fates. In August 2007 Shell's right to drill 3 exploration wells in the Beaufort Sea near ANWR was revoked by U.S. courts

In 2007 the provincial government of Alberta introduced new royalty rates which will increase the government take by an additional 15 percent.. Alberta has already seen a loss of investment which will hinder future production in the region. 2007 oil and gas land sales were down over 50%.

Lost Production

Oil market production losses between the two eras, both from base level output and expected new output.

Most of the delay in Kashagan oil output is due to technical problems. Difficult to determine future loss from government forced renegotiation of contract, but may result in chill on investment levels for new resources.

Depending upon when ANWR leasing had occurred, loss in domestic production could be substantial, exact amount is unknowable since the prospect has done been drilled, but could be as much as 1 million b/d had leasing occurred ten years ago

Several companies, including Canada Natural Resources, Nexen, and Imperial Oil have announced reduced investment in the area. Loss of output unknown, but rising royalty rates likely to curtail future output growth.

CHART (page 4 of 4)

Era of Positive Expectations

Outlook in general (but not always) is positive: (1998-2004

1999-2006 saw natural gas production, a major part of Bolivia's economy, grow by nearly 400% to 466 bcf.

Bolivia

Era of Negative Expectations

Outlook in general (but not always) is negative: after 2004

Nationalization of state energy resources in 2006 by president Evo Morales and the subsequent loss of foreign investment and management caused production growth to diminish. The government announced that it will be unable to meet contractual export requirements to Argentina and Brazil in 2008.

Lost Production

Oil market production losses between the two eras, both from base level output and expected new output.

Lost production and exploration due to significant decline in investment. Loss of new production unknown, but likely to be substantial over the next 5 years.

Mexico

Between 1995 and 2004 Mexican production increased from 3.08 mmb/d to 3.85 mmb/d. In September 2004, the EIA predicted production of 4 mm/bd in 2005.

Mexico's production has been in decline since 2004. The 4 mmb/d predicted for 2005 never materialized - instead output dropped to 3.78 mmb/d. Only 3.53 mmb/d were produced in 2007 and 3.39 mmb/d are expected to be produced in 2008. Some analyst believe Mexico's oil output has peaked, but the more serious problem is that Pemex, Mexico's state-owned oil monopoly, does not have the funds needed for exploration and development of new fields.

Much of Mexico's lost production comes from lack of funding for Pemex. Pemex's budget is subject to approval by the Mexican Congress. PEMEX operates on a very tight budget, large debt service, and no legal authority to bring in outside investors. We estimate lost of supply to the world market in the 2005-2010 time period at approximately 500,000 b/d, and possibly more.

Estimated Loss of Supplies to the World Market, 2005-2010

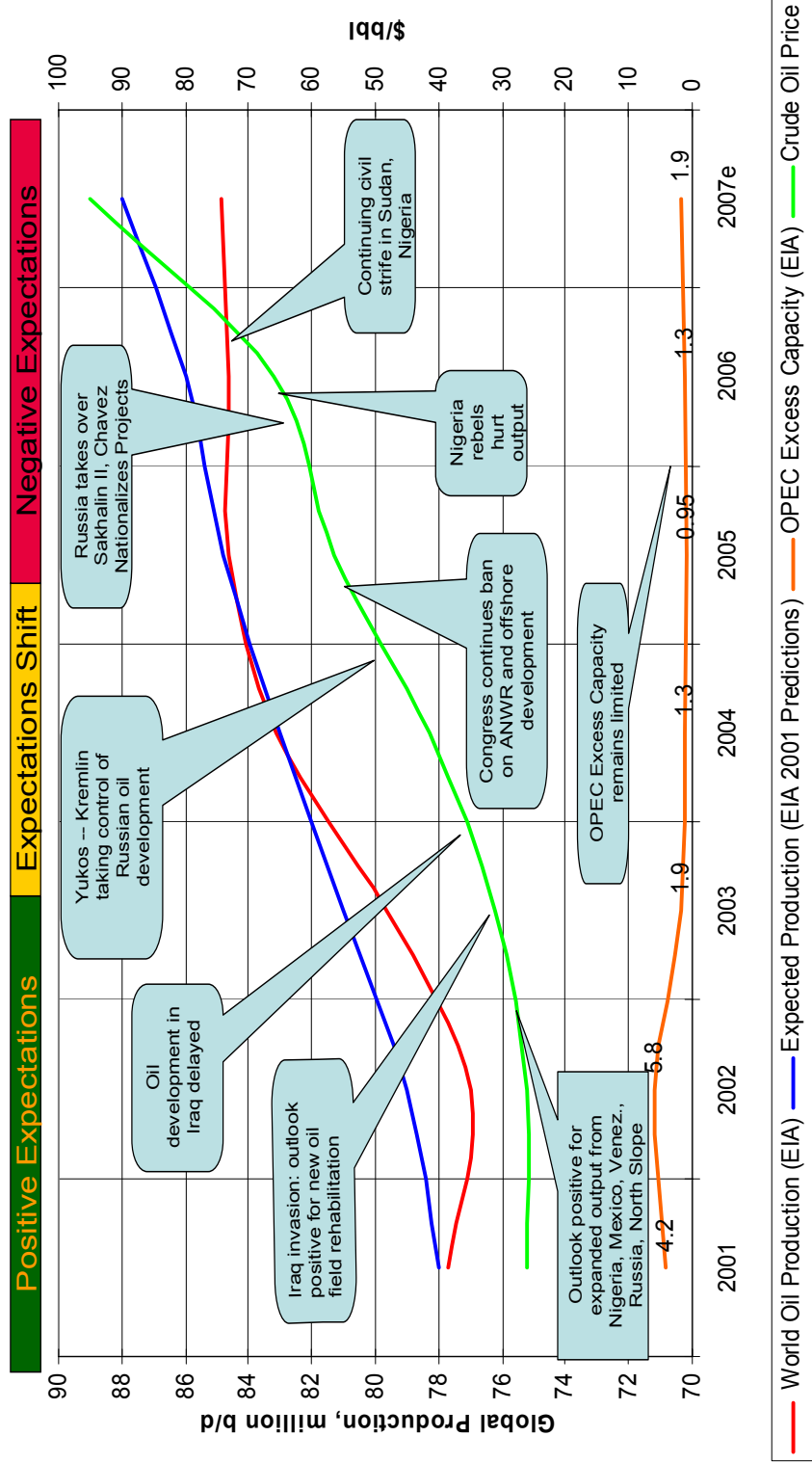
2.5 – 4.5 mmb/d³

Sources: Energy Information Administration, USGS, *Upstream Online, Oil and Gas Journal*, Institute for Energy Policy (Moscow), EPRINC

³ In the end the estimate of lost production is just that, an imprecise estimate.. In many respects, the lost opportunities from these unfortunate events may be more significant as producers lose opportunities to evaluate and extend new technology and gain information that can enhance future exploration in the region in question.

Graph One

A Series of Unfortunate Events Leading to New Expectations



The Downstream Sector

Year to date, the U.S. is consuming about 20.5 million barrels/day (mbd) of petroleum and produces about 8.5 mbd (including natural gas liquids and processing gains). Our remaining supply is provided through imports of crude oil and petroleum products plus about 700,000 b/d of ethanol. Ethanol, however, presents some unique challenges to the transportation fuels sector. It is relatively more expensive to transport (it is not petroleum) as it has no access to the U.S. product pipeline network, operates at two-thirds the BTU value of conventional gasoline, and consumes substantial volumes of transportation fuels in the production of its main feedstock, corn.

Rising world demand for transportation fuels, particularly middle distillates, have grown at a much faster rate than additions to refinery capacity. The world refining industry is operating at very low levels of excess capacity, and the existing capacity is not well matched to the recent high growth in demand for middle distillates. This creates an environment where we can experience periodic spikes in the price of transportation fuels. For example, U.S. refining capacity is 4 mbd below effective available capacity (3 mbd below nameplate capacity). As result, US must import diesel fuel and gasoline components (historically 10% of consumption) from foreign refineries.

Middle distillates (including diesel fuel) have been growing at substantially higher rates than gasoline. Until new world wide refining capacity is added to improve output of middle distillates, we expect to continue to face a market where gasoline remains heavily discounted to diesel fuel. Although both gasoline and diesel prices are very high, the price of gasoline as been attenuated by the large volumes of co-produced gasoline components on the world oil market. What is occurring is that as European and Asian refining centers attempt to maximize output of middle distillates, they have no choice but to also produce gasoline components which are often sold into the U.S. market.

The decline in the value of the U.S. dollar has also increased the cost of imports, but we are reluctant to speculate whether there is any kind of direct causal relationship between the two. This is an extremely complex and esoteric issue involving trade flows and monetary policy which is better addressed by analysts other than EPRINC

Concluding Remarks

The oil market is highly integrated and a disruption somewhere in the market is a disruption everywhere. Today, world oil prices reflect the consequences of rising world demand from major growth centers such as China and India, but more importantly, prices also reflect a substantial disruption in oil supplies. This disruption, however, is not the result of an identifiable single event, but events taking place at several production centers.

Nonetheless, this production is missing from the market and the subsequent higher prices are imposing substantial costs on the U.S. economy and U.S. consumers. In the period we call the “era of positive expectations,” buyers and sellers reasonably expected that oil supplies would grow from major producing regions, but these additions to output did not occur largely because of problems above the ground and not below. These problems in the upstream market have been amplified by constraints in refining capacity.

Certainly, we would have expected oil prices to rise in response to demand growth and rising costs of new supplies, but current price increases reflect a failure of the world petroleum market to deliver new supplies from fields that could easily do so within the current (or even a lower) price structure. U.S. policies that have restricted opportunities to expand conventional supplies from Alaska, and prospective offshore and onshore provinces in the lower 48 have contributed to this high price environment along with civil strife in Nigeria, delays in new OPEC capacity, and resource nationalism in Venezuela.

Many observers have argued that these higher prices also provide benefits in demand reduction, new conservation initiatives, and acceleration of incentives for moving the U.S. to the fuels of the future. Whether this is a cost effective approach for the U.S. economy depends on whether current prices are in fact approaching the long run backstop price, i.e., the price where alternative fuels, conservation, unconventional supplies, etc., are so plentiful that the price of oil can only rise modestly if at all. Our perspective is that the current price structure is not sustainable, but our failure to provide access to conventional fuels may mean the transition to a lower and more realistic price level may also involve a lot of unnecessary economic pain.