

# The Petroleum Economics Monthly

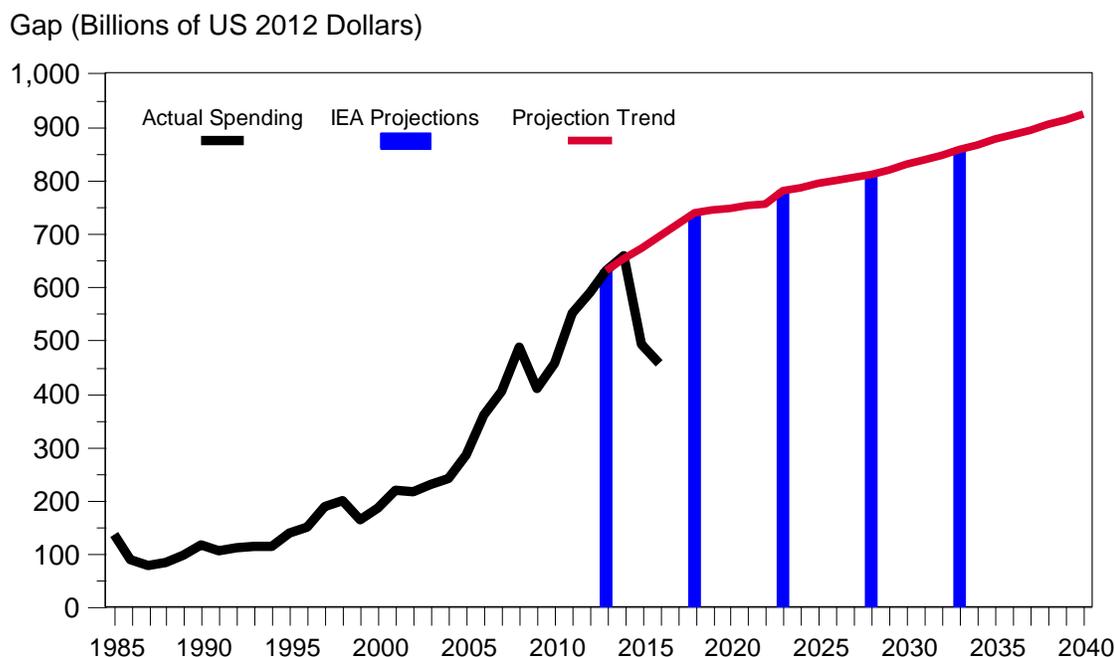
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## Energy: A Gathering Storm II

**The Growing Global Crude Oil E&P Investment Gap**  
Actual E&P Spending vs. IEA Projections for Required Investment



Source: US BEA; IEA; PKVerleger LLC.



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**Summary**

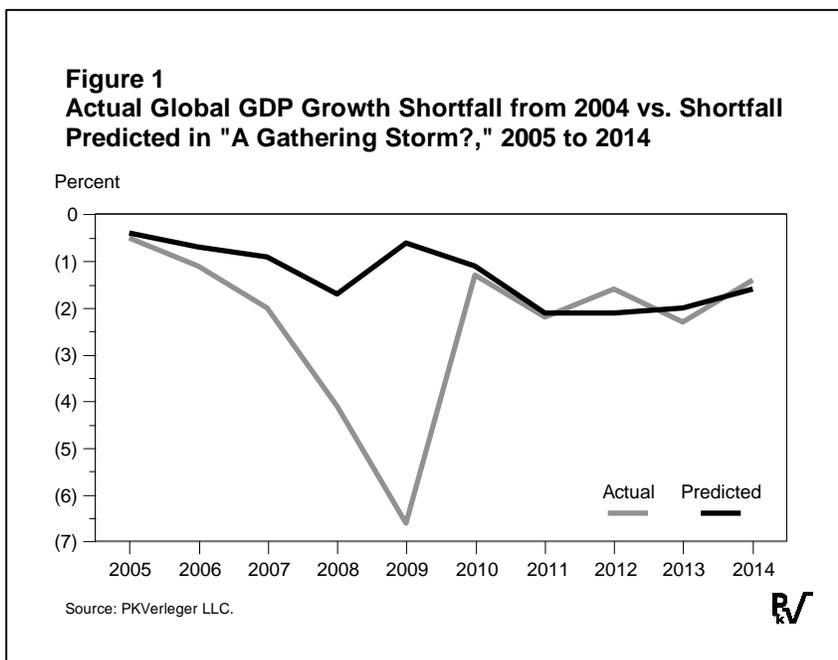
We have combined the July and August issues of *The Petroleum Economics Monthly* into a single report. Its title, “Energy: A Gathering Storm II,” is based on a 2004 paper by this author entitled “Energy: A Gathering Storm?”<sup>1</sup> The paper, written when crude traded around \$40 per barrel (today’s price, ironically), offered this warning:

Crude prices could climb from the present average in the \$40s to perhaps \$55 by mid-2005 and as high as \$70 in 2006 should “shortage conditions” occur in those years. Even higher prices might be seen later in the decade. *In theory, crude prices might reach \$160 per barrel if history follows the 1973 script precisely* [emphasis added]. As already noted, conditions today are propitious for such an increase. This does not imply, though, that prices will go up in 2005 or 2006. Circumstances are favorable, but that is all that can be said.<sup>2</sup>

The 2004 analysis cautioned that higher prices were likely for three reasons: surging global consumption (especially in India and China), lack of investment in crude oil development and production, and refining constraints that made production of sufficient volumes of clean fuels, especially ultra-low-sulfur diesel (ULSD), impossible. Four years later, the possibility of higher prices became reality for precisely the reasons identified.

“A Gathering Storm” also warned that the higher oil prices would depress global economic activity. It presented a formula for calculating the impact, one that proved remarkably accurate give the trend in oil prices, as can be seen from Figure 1. This graph shows the actual change in real US GDP from the prior year for 2005 through 2014 as well as the impact of higher prices on GDP projected in the 2004 paper. With the exception of 2007, 2009, and 2009, the predictions were remarkably on track. Recalling that a broken clock will be correct twice a day, we are not inclined to place much stock in these results. We do note, though, that the formula that produced these projections was carefully derived.

The next energy storm is on the horizon. The most important “cloud” in the distance is the collapse of crude oil exploration and production investment. The cover figure illustrates the coming



<sup>1</sup> See Philip K. Verleger, Jr, “Energy: A Gathering Storm?” Chapter 7 (pp. 209-246) in C. Fred Bergsten (ed.), *The United States and the World Economy: Foreign Economic Policy for the Next Decade* (Washington, DC: Institute for the International Economics, January 2005) [https://goo.gl/cfSveu].

<sup>2</sup> Verleger, p. 224.

predicament. It shows estimated global E&P investment along with the five-year-interval projections of investment requirements published a year ago by the International Energy Agency. The sharp drop in oil prices has already had an impact. Investment in 2015 will fall thirty-three percent below the level the IEA sees as required to meet future global oil demand. Investment in 2016 could fall thirty-five to forty percent below the agency's projected requirement.

This underinvestment will inevitably result in oil and gas production that is lower than consumer demand. While the date of the tipping point is indefinite, we suggest a pinch could occur as early as 2018. When the squeeze does happen, prices will rise. The increase will not be driven by *the world running out of oil* but rather by insufficient investment in the capacity needed to deliver adequate crude supplies to refineries.

On the plus side, the inevitable price boost will spur increased effort and production from on-shore fields in the United States, especially those where fracking has been successful. The supply rise will not be enough, however. In the global scheme, fracking is a sideshow—a dramatic and substantial one but still a sideshow.

The drop in supply will occur because large oil fields in the US Gulf, Mexico, Brazil, the North Sea, Africa, and the Middle East, as well as tar sands projects in Canada, will be left untouched or developed at a rate far slower than the one needed to keep oil prices between \$40 and \$60 per barrel. Higher prices will be required to dampen demand and boost supply. Prices could rise significantly if a group of producing countries band together to limit supply.

The next storm will have a different ending from the one foreseen in 2004 because the large publicly held oil companies will move much less quickly to boost production and their investment in new developments will be limited. This divergence between the coming cycle and prior ones will occur for several reasons.

First, the success of fracking and the resulting change in the price environment increase the risk associated with long-term investments. The absence of certainty regarding prices raises the possibility of large losses and dictates that outlays going forward be much lower and completion times shorter.

Second, increased concerns regarding global warming boost the risk associated with investment in long-lived projects. The real possibility that reserves could be “stranded” by limits on hydrocarbon use or made unprofitable by rising fuel taxes will cause companies to defer or cancel projects that would have been funded rapidly in the past.

Third, the explosive growth in new energy consuming and supplying technologies that can and will displace traditional fuels will be seen as a harsh threat to the economics of large-scale fossil-fuel projects. The widespread adoption of electric cars due to technical breakthroughs or mandates, for example, could jeopardize investments in crude production and refining.

Fourth, high prices will likely slow economic growth again. By 2019 or 2020, we may even see a global recession if the market swing is excessively violent. The recession will depress fossil-fuel consumption. It will also accelerate the displacement of these fuels if oil-exporting countries conspire to keep crude prices high.

The future, in short, promises to be different from the past. Oil prices have slumped four times in the last forty years: in 1986, 1990, 1998, and 2015. Each price decline has been followed by a sharp rise. In the first three instances, the price increase sparked greater expenditures to boost supply, an action that ultimately led to the next price decrease.

Another large oil price hike seems very likely. As explained here, though, its consequences could be much different from prior cycles. There will be less investment in fossil-fuel development and production and more intensive, coordinated efforts to phase out fossil fuels. Indeed, this price increase could hasten the fossil-fuel industry's ultimate sunset.

**Note: The full fifty-page “Energy: A Gathering Storm II” report is available to clients of PKVerleger LLC.**

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